IN THE DISTRICT COURT OF THE UNITED STATES
FOR THE WESTERN DISTRICT OF NORTH CAROLINA
ASHEVILLE DIVISION

CIVIL NO. 1:00CV144

SUPERGUIDE CORPORATION, a North Carolina Corporation, Plaintiff, Vs. DIRECTV ENTERPRISES, INC., a Delaware Corporation; DIRECTV, INC., a California Corporation; DIRECTV OPERATIONS, INC., a California Corporation; HUGHES ELECTRONICS CORPORATION, a Delaware Corporation; THOMSON CONSUMER ELECTRONICS, INC., a Delaware Corporation; ECHOSTAR COMMUNICATIONS CORPORATION, a Nevada Corporation; ECHOSTAR SATELLITE CORPORATION; a Colorado Corporation; and ECHOSTAR TECHNOLOGIES CORPORATION, a Texas Corporation, Defendants/Third Party Plaintiffs, Vs. GEMSTAR DEVELOPMENT CORPORATION, Third-Party Defendant.	)	MEMORANDUM OF OPINION (FILED UNDER SEAL)

THIS MATTER is before the Court on the Defendants' motions for summary judgment and the motion of Third-Party Defendant Gemstar Development Corporation (Gemstar) for

summary judgment against certain Defendants. Although a request for a hearing on these motions has been made, the undersigned finds no hearing is necessary.[1]

I. PROCEDURAL HISTORY

In June 2000, SuperGuide Corporation (SuperGuide) brought this action seeking declaratory and injunctive relief against the Defendants for infringement of their patents U.S. Patent No. 4,751,578 to Reiter, *et. al* (Reiter '578), U.S. Patent No. 5,038,211 to Hallenbeck (Hallenbeck '211) and U.S. Patent No. 5,293,357 to Hallenbeck (Hallenbeck '357), for interactive television programming guides. Each Defendant answered and asserted counterclaims for a declaration of non-infringement and invalidity.

In April 2001, Defendants DirecTV Enterprises, Inc., DirecTV, Inc., DirecTV Operations, Inc. (DirecTV) and Hughes Electronics Corporation (Hughes) obtained permission to implead Gemstar, the licensee of SuperGuide's patents. In the third-party complaint, DirecTV and Hughes also sought a declaration of non-infringement and invalidity as well as a declaration of ownership of the patents. Gemstar asserted crossclaims against SuperGuide for breach of contract and declaratory relief. SuperGuide counterclaimed against Gemstar for a declaration of the field of use reserved in the license agreement between the two.

On October 25, 2001, the undersigned construed certain claim language used in Reiter '578, Hallenbeck '211 and Hallenbeck '357. ***SuperGuide Corp. v. DirecTV Enter., Inc.*, 169**

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[1]Thomson Consumer Electronics, Inc. (Thomson) has moved to correct a footnote contained in the Memorandum of Decision filed October 25, 2001. There being no objection, that motion is allowed and the footnote at page 3 is deleted.

F.Supp.2d 492 (W.D.N.C. 2001) (the *Markman* decision)[2]. Based on the claim construction rendered therein, the Defendants have moved for summary judgment and Third-Party Defendant Gemstar has cross-moved for summary judgment.

II. STANDARD OF REVIEW

SuperGuide alleges the Defendants have infringed its patents both literally and pursuant to the doctrine of equivalents.

> A determination of infringement requires a two-step analysis. First, the claim must be properly construed to determine its scope and meaning. Second, the claim as properly construed must be compared to the accused device or process. In order for a court to find infringement, the plaintiff must show the presence of every '[limitation]' or its substantial equivalent in the accused device. Claim construction is an issue of law . . . . The determination of infringement, whether literal or under the doctrine of equivalents, is a question of fact.

***Ecolab, Inc. v. Envirochem, Inc.*, 264 F.3d 1358, 1364 (Fed. Cir. 2001) (internal citations and quotations omitted).** The issue, then, is whether a determination of infringement can be resolved by this Court without a jury.

> [A grant of] summary judgment [is appropriate] when the record shows [there are] no genuine issues of material fact and entitlement to judgment as a matter of law [is proper] for the moving party. [In reviewing the record, the] court draws reasonable inferences from the evidence in favor of the non-movant, [SuperGuide]. Moreover an asserted issue of material fact is not "genuine" in the sense of Fed. R. Civ. P. Rule 56 if a reasonable jury could only resolve the question for the moving party. In assessing issues of material fact to determine whether a "reasonable jury" could disagree on them, [the] court identifies facts posing a potential dispute and then examines those facts in the context of the legal criteria by which a fact finder would resolve the dispute. . . . Infringement under the doctrine of equivalents requires an intensely factual inquiry. And, [the] court is well aware of the difficulty of granting summary judgment motions on issues requiring delicate balancing of many factual components. Ultimately [the] court may [grant] summary judgment of non-infringement under the doctrine of equivalents, where

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[2] ***Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996).**

> that doctrine is legally applicable, only if it discerns no genuine issues of material fact and that no reasonable jury could find equivalence. . . . In this review, [the] court must examine the record for genuine issues of material fact and must determine that no reasonable jury could reach a different conclusion.

***Vehicular Tech. Corp. v. Titan Wheel Int'l, Inc.*, 212 F.3d 1377, 1381 (Fed. Cir. 2000) (internal citations omitted).**

III. DISCUSSION

A. The Reiter '578 Patent.[3]

1. Findings of Fact.[4]

In 1988, the Reiter patent was issued for an interactive programming guide (IPG) which allowed a television viewer to select specific programs for viewing. The invention involved a digital to analog conversion of the signal containing television programming information and the mixing of that signal with another analog signal containing video information. The distinction between analog and digital signals was addressed in the *Markman* decision: "analog" means an electrical signal which is continuous and analogous to its source; whereas "digital," while also referring to an electrical signal, is not continuous because the data is converted into a series of

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[3]The motion for summary judgment as to the Reiter '578 patent was prepared by counsel for Defendants EchoStar Communications Corporation, EchoStar Satellite Corporation and EchoStar Technologies Corporation (EchoStar). Each of the other Defendants has joined in that motion. Gemstar has joined in SuperGuide's opposition to the motion.

[4]SuperGuide and Gemstar have objected to the Defendants' reference to deposition testimony of Michael Zemering, one of the inventors of the patent. The Court has not considered that testimony and has, effectively, excluded it. Likewise, Frank Shannon, another inventor, corresponded with the Court concerning his deposition and certain documents which he alleged did not represent his attorney's work product. Copies of that letter were provided to counsel for all parties. Nothing in Mr. Shannon's letter has been considered for the purposes of this ruling.

binary numbers which represent a sampling of the data at regular, closely spaced intervals.

***SuperGuide*, 169 F.Supp.2d at 497-98.**

> Television signals carrying the information for television programs are typically transmitted or broadcast over the airwaves by conventional terrestrial antenna or via satellite or transmitted by means of a cable network. In each method, the television signal, which may be analog or digital, must be modulated onto, *i.e.*, carried on, an (sic) RF [radio frequency] carrier wave. This is due to the fact that unmodulated television signals cannot be broadcast any appreciable distance.
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> . . .
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> In broadcast systems using transmission from radio towers, the frequencies of the carrier waves correspond to the frequencies of the various television stations or channels. When transmission is received via antenna by a television set, a "tuner" is used to isolate the carrier wave carrying the desired television signal, *i.e.*, to tune to the desired channel. The television signal is then demodulated, *i.e.*, separated, from the carrier wave to obtain only the television signal (referred to as the "baseband video" or "television signal") and the associated audio, which are then used to present the television program. *In the case of terrestrial broadcast systems, until the deployment of digital television (DTV) over the past few years, the television signals were all analog signals.*
>
> Cable and satellite systems follow a similar approach, *i.e.*, modulating the television signal onto a carrier wave and broadcasting the signal, along with other similar signals, to the homeowner via cable network or satellite transponder.
>
> *Originally, all television signals were analog signals.* In the mid-1990's, various system providers began transmitting digital television signals. *To be transmitted, such digital television signals are still modulated onto analog RF carrier waves.*
>
> *In many cable and all satellite systems, the modulated television signals cannot be received directly by a typical television set* and used to display a television program. Rather, such systems typically include a "set top box" to convert the signal to a format that can be displayed on the television.
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> . . .
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> [I]n 1985 . . . television signals modulated onto carrier waves included those that could be displayed directly by a conventional television set (*e.g.*, without the need for an intervening cable or satellite set top box) as well as those that required conversion to another form before being displayed by the television set. In 1985, conventional television sets included sets that were "cable ready" (*i.e.*, which could present non-scrambled television programs broadcast via cable without the need of a cable set top box) and those that were not. Examples of conventional signals that required some sort of conversion before they could be displayed included cable and satellite transmission signals that could not be displayed directly on a television set

> and scrambled signals that required descrambling before display, *e.g.*, subscription channels or pay-per-view programs.
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> Cable systems that required set top boxes to convert the received cable signals to ones that could be displayed on a conventional television set were in widespread commercial use in 1985, and the technology for implementing such systems was well known. *Analog direct broadcast satellite (DBS) systems, which required satellite dishes and set top boxes to convert the analog satellite signals to ones that could be displayed on a television set were also known and in commercial use in 1985,* and, again the technology for implementing such systems was well understood. *In 1985, some of the required underlying technology for implementing digital cable and satellite systems was just beginning to be developed and was not well known.*

Exhibit O, Supplemental Expert Report of S. Merrill Weiss, *attached to* Declaration of David A. Dillard in support of Gemstar's Motions for Summary Judgment of Infringement of Claim 1 of U.S. Patents 5,293,357 and 5,038,211 and for Permanent Injunction, filed November 8, 2001, at 6-8 (emphasis added).

The Defendants DirecTV and EchoStar are DBS (Direct Broadcast Satellite) television providers. Defendants Hughes, Thomson and EchoStar manufacture, market and/or sell integrated receiver decoders (IRD's) for use with DBS television services. **Amended Declaration of Stephen P. Virden, filed November 16, 2001, in Support of Defendants' Motions for Summary Judgment, ¶¶ 3, 5.**[5] DBS systems operate by the transmission of digital signals from an uplink center on Earth to an orbiting satellite which then returns the signals to Earth for reception by the television sets of people who own or subscribe to such services. **Exhibit A14, Declaration of David Kummer, *attached to* SuperGuide's Opposition to Defendants' Joint Motion for Summary Judgment of Noninfringement of the '578 Patent ["SuperGuide's Opposition to Noninfringement of the '578 Patent"], at 2-3.** IRD's are the set

[5]Defendants' motion for leave to amend this declaration is granted.

top boxes placed on the users' televisions which receive modulated carrier signals containing digital data streams and process the same for viewing on the televisions.[6] **Exhibit A6, Declaration of Jorge Guzman, *attached to* SuperGuide's Opposition to Noninfringement of the '578 Patent, at 2, 7.** SuperGuide and Gemstar claim these IRD's infringe on Reiter '578. Therefore, a basic understanding of how the Defendants' DBS systems operate is necessary.[7]

A DBS system operates by the transmission from uplink centers of streams of digital data packets, which have been modulated onto a carrier wave, to a network of satellites positioned synchronously to the Earth and orbiting at the same rate as the Earth's rotation thus causing the satellites to remain in fixed or stationary locations above the Earth.[8] **Virden Amended Declaration, ¶ 5; Oxford English Dictionary (2d ed. 1989).** The digital data packets contain the video, audio, program guide and other data associated with television programs. **Virden Amended Declaration, *supra*, ¶ 6.** Each packet has a packet identifier (PID) value which allows for the differentiation of packets within the uplink signal, such as packets for CNN versus ESPN

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[6]"Television information (meaning the information generated to produce a television show) is comprised of video information and audio information. [This] information can be encoded as either analog data or digital data. . . . In Digital Satellite Television Broadcast systems, the television information is encoded as digital data at the source." **Exhibit A1, Declaration of Teresa Dahlberg, *attached to* SuperGuide's Opposition to Noninfringement of the '578 Patent, at 15.**

[7]The description provided is intentionally simplistic in order to prevent the revelation of proprietary information.

[8]Gemstar's expert described the systems almost identically. "The uplink center combines the [television] information, which is in digital form, into a group of data streams each carrying multiple programming services, modulates them onto appropriate carrier waves and transmits the information on the carrier waves up to . . . satellites stationed in geostationary orbits over the equator roughly south of the United States. The video, audio and data information is received by transponders on the satellites and retransmitted on new carrier waves to receivers all across the country." **Weiss Supplemental Declaration, at 9.**

programming. **Kummer Declaration, at 3.** This is necessary because a single uplink signal will usually carry programming data for at least ten networks. ***Id.*** The signal is able to carry this quantity of data because it is encoded and compressed according to the Moving Pictures Expert Group (MPEG 2) standard.[9] ***Id.*** "A simple description of MPEG is that it describes the packaging of digital audio, video, and other information for the purposes of transmission, and hence implicitly specifies the techniques for unpacking such signals within the receiving circuitry. . . . [T]he digital encoding of a . . . television signal generates too much data given the frequency spectrum limitations of satellite broadcasts. Therefore, data compression techniques are used to reduce the amount of data that must be transmitted." **Exhibit A1, Declaration of Teresa Dahlberg, *attached to* SuperGuide's Opposition to Noninfringement of the '578 Patent, at 16.**

The uplink signal is received by the satellite transponder, a device which automatically retransmits a signal after amplifying it and translating its frequency. **Kummer Declaration, at 4.** The signal transmitted back to Earth, called the downlink signal, is received by a satellite dish at the owner's residence and then passed to the IRD. ***Id.*** SuperGuide's expert has averred that "[a]t the receiving end, the Thomson, Hughes, and EchoStar IRDs receive the analog signals and demodulate, demultiplex, perform error detect/correction, and decompression in order to separate the individual packet streams and recover the digital data encoded within the streams in the form of digital baseband signals." **Dahlberg Declaration, at 17.** "[T]he operation of the satellite is

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[9]"The Motion Picture Experts Group (MPEG) was established in 1988 to define standards for coded representation of digital audio and video. The outcome was a set of standards relating to the encoding, packaging, and transmission of digital audio and video." **Dahlberg Declaration at 15.**

not affected by whether an (sic) FM modulated signal (carrying analog data) or a QPSK[10] modulated signal (carrying digital data) is carried by the uplink/downlink. The satellite merely performs a frequency shift on the carrier wave, which is always an analog signal." ***Id.*, at 21 (footnote added).** There is no disagreement among the parties' various experts that digital signals must be modulated onto an analog carrier wave for transmission to and from the satellites.

SuperGuide's claim is directed to the IRD's used to recover the digital signals from the carrier wave sent from the satellites, *e.g.*, the downlink signal. Defendants DirecTV and Hughes[11] manufacture and market IRD's which process these downlink signals. Before any signal is sent to the inside set top box, it must be translated into a lower frequency, a function which is performed by the low noise block. **Guzman Declaration, at 3-4.** The signal is then forwarded to the owner's set top box within which a tuner

> at step 2 tunes to the carrier frequency . . . of the signal carrying the program information a user has selected and downconverts it to a baseband signal. The demodulator at step 3 demodulates or extracts the digital data streams containing several channels of program information (typically ten channels) from the baseband signal. After demodulation, all processing within the IRD is performed using digital circuits until the output stage of the IRD.
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> At step 4, the FEC [forward error correction] decoder performs forward error correction through a series of complex algorithms. Digital data modulated onto a carrier wave is more immune to noise because it consists of "1"s and "0"s rather than a time varying analog waveform. Thus, the FEC decoder can eliminate many transmission errors by checking to determine whether any digital data was improperly demodulated (e.g., were any "1"s demodulated as "0"s or vice versa) as

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[10]Quaternary Phase Shift Keying is a modulation scheme "executed by applying one of four possible phase shifts to the uplink signal. Each of the four possible phase shifts represents a unique combination of two bits, such as "00" or "01." The QPSK modulation process results in a broadcast bitstream that represents the data contained in digital data packets." **Declaration of Michael Cavanaugh, filed November 8, 2001, in Support of Defendants' Motions for Summary Judgment, at 2-3.**

[11]The EchoStar Defendants' products will be described separately *infra*.

a result of transmission errors due to atmospheric conditions such as rain or thunder storms.

The FEC decoder sends the demodulated compressed digital baseband data to the transport IC [integrated circuit] at step 5. The transport IC determines whether packets are to be discarded or kept for further processing. Specifically, the channel demultiplexer in the transport IC filters out the undesired packets leaving only packets with a correct service channel identification number (also called a SCID) based on the program requested by a user.[12]

Next, the packets containing the desired video data are decrypted, the packet headers (including the field carrying the SCID value) are removed, and the remaining data is sent to the MPEG decoder at step 6. MPEG or Motion Picture Experts Group is a method of compressing data, and the MPEG decoder decompresses the digital data streams that were compressed at the head-end and creates the pixels that comprise the picture. To the extent that an on-screen display (OSD) of program guide information is to be combined in some fashion with video data, the MPEG decoder performs a digital pixel by pixel combination of the video data from the video decoder with the OSD [program guide] data from memory.

At step 7, the above processed digital video data is encoded by the NTSC (National Television Standards Committee) encoder and sent to the output drivers. Essentially, the NTSC encoder converts the digital data into a baseband analog video signal. Finally, the RF [radio frequency] modulator included in the output drivers at step 8 can convert the baseband analog video and audio signal to the appropriate frequency for receipt by a regular television on channel 3 or 4.

***Id.*, at 5-6 (footnote added; other footnotes omitted).**

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[12]Or, as concisely noted by one of Thomson's experts, "the SCIDs of each packet are compared to the SCID corresponding to the program requested by the user. Packets having the correct SICD are kept for further processing, and packets that do not are discarded. This process is sometimes referred to as demultiplexing." **Declaration of Michael McLane in Support of Defendants' Motions for Summary Judgment of Non-Infringement Regarding the '578, '211 and '357 Patents, filed November 8, 2001, at 4.**

2. Conclusions of Law

a. "[A] regularly received television signal."

"After claim construction, the next step in an infringement analysis is comparing the properly construed claims with the allegedly infringing devices." ***Ecolab, Inc.*, 264 F.3d at 1369.** Element (b) of Claim (1) of Reiter '578 reads "a mixer for mixing a regularly received television signal with the signal generated by the microcontroller in accord with instructions of said microcontroller." The undersigned construed this element as follows:

> The term "mixer" means the electronics for (a) receiving an unmodulated digital signal generated by the microcontroller which contains television programming information and converting the same into an analog format; (b) receiving from the RF section an analog television signal, whether demodulated or unmodulated, which contains television video information; (c) receiving and stripping a modulated analog signal which contains television video information from the RF section; and (d) mixing the two analog signals to produce an analog signal containing television programming and video information which is then transmitted to the RF section. The mixer does not function as a switch.

***SuperGuide*, 169 F.Supp.2d at 526.**

(i). Modulation onto a carrier wave.

Defendants move for summary judgment claiming their IRD's receive and process only digital signals, thus distinguishing their inventions from Reiter '578 which operates on "a regularly received television signal." Gemstar agrees that

> *the way in which defendants' television signals are broadcast is not at issue* with respect to the '578 patent. What is at issue is the type of signal that is received by the mixer. In defendants' systems, the mixer receives a straight-forward digital baseband signal. *Whether it was encrypted, encoded, multiplexed and/or modulated under the carrier wave in a particular way for the trip from the uplink center to the satellite and then down to the receiver is irrelevant to the issues before the Court.* The issue is a simple comparison for equivalency of the mixing of a microprocessor signal and a baseband video signal in either the analog

> domain, as required by the construed claims, or in the digital domain, as practiced by the defendants.

Gemstar's Notice of Adoption of SuperGuide's Opposition to Defendants' Motion for Summary Judgment of Non-Infringement of the '578 Patent and Supplemental Arguments, filed November 28, 2001, at 7-8, 2 n.2 ["Gemstar's Notice of Adoption"] ("Carrier waves are necessarily analog. Hence, 'transmission of a digital signal' means the transmission of a digital signal that has been modulated onto an analog carrier wave.") (emphasis added).

SuperGuide, however, argues that the downlink signal received by the owner's satellite dish is modulated onto an analog carrier wave, thus, both literally infringing and infringing by the doctrine of equivalents.[13] SuperGuide argues that "[i]n fact, the signal received from defendants' satellites is an analog signal modulated onto a carrier wave. This requirement of the Court's order is *literally* met." **SuperGuide's Opposition to Noninfringement of the '578 Patent, at 7.**

This position is based on the declaration of SuperGuide's expert, Teresa A. Dahlberg, who, contrary to Gemstar's expert, has concluded that although digital satellite systems use digital data, the transmission thereof occurs only after that data is converted to analog signals. Thus, she claims these signals qualify as "regularly received television signals."

> Each of the accused IRDs receive (sic) a "regularly received television signal" as described by the Court's order, because the IRDs receive broadcasts from satellite systems that employ at least two stages of modulation at the uplink facility . . . . Because modulation of a carrier wave always produces an analog signal, *at least* the second stage of modulation comprises "an analog signal modulated onto a carrier wave."
>
> It is *quite likely* that techniques *very similar* to that (sic) depicted in Fig. 1, below, are used at the DirecTV and EchoStar broadcast facilities since these are standard

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[13]Although SuperGuide has disclaimed any literal infringement due to the undersigned's claim construction, *see, e.g.*, SuperGuide's Opposition to Noninfringement of the '578 Patent, at 1, its brief nonetheless contains arguments supporting a theory of literal infringement.

techniques employed for the transmission of digital data using radio frequency (RF) carrier waves within a satellite system. (Benoit, Exhibit 4, p. 120). *QPSK is considered to be a digital modulation technique, because the resultant transmitted analog carrier wave carries digital data.* However, the implementation of QPSK modulation for subsequent transmission via satellite requires a digital to analog (D/A) conversion of the baseband digital signal into an analog signal and one or more steps of modulation of the analog signal in order to place the signal at a carrier frequency that is within the frequency range of the satellite system. . . .

Within the uplink facility, a baseband digital signal carrying digitally coded television information is converted into two analog signals, I and Q, using a D/A converter component. . . .

In a first modulation stage, the analog I and Q signals are modulated onto an intermediate frequency carrier wave, (of the order of 70 MHz) using a QPSK modulation component. The resultant intermediate frequency signal (an analog signal) comprises an analog signal modulated onto a carrier wave as construed by the Court. In a second modulation stage, this intermediate frequency analog signal is modulated onto a carrier wave (of the order of 14 GHz) using an analog modulation technque (sic) (such as AM, FM, or PM), for transmission on the uplink to the orbiting satellite.

This second modulation stage is often called "upconversion" *because the modulation process "shifts up" the analog signal to a range of frequencies that has been designated by the Federal Communications Commission for satellite transmissions.* . . .

Note that some newer implementations of QPSK modulation may interchange the step of modulation with the step of D/A conversion.

Dahlberg Declaration, at 25-27 (emphasis added).

There are several problems with Dahlberg's opinion. First, she notes that "[i]t is *quite likely* that techniques *very similar* to that (sic) depicted in Fig. 1, below, are used at the Direct TV and EchoStar broadcast facilities . . . ." ***Id.*, at 25.** This conclusion is supported by her reference to Exhibit A4, attached to her Declaration, which includes excerpts from, *"Satellite Television Techniques of Analogue and Digital Television,"* first published by H. Benoit in France in 1998. Dahlberg specifically references page 120 from Benoit which contains his discussion of a "Global

view of the transmission/reception process" used by digital satellite television. Figure 5.38 is Benoit's depiction of "The complete DVB transmission/reception chain."

Figure 1 referenced in Dahlberg's Declaration, however, is not Benoit's Figure 5.38. Figure 1 is actually found at Exhibit A15 attached to the Declaration and is described by Dahlberg as an "extraction" from "The complete DVB transmission/reception chain," *i.e.*, Figure 5.38. Setting aside the obvious problem of whether such an "extraction" constitutes admissible evidence (*see, e.g., Digital Biometrics, Inc. v. Identix, Inc.*, 149 F.3d 1335, 1339 n.1. (Fed. Cir. 1998)), Dahlberg's version contains elements not present in the original drawing. Nor does it purport to describe the accused products although Dahlberg, without explanation, attributes its features to them. And, Dahlberg does not opine to a degree of scientific certainty that the same techniques are, in fact, used by the accused devices. ***Talley v. Danek Medical, Inc.*, 179 F.3d 154, 162 (4th Cir. 1999) ("[T]he district court was well within its discretion to disregard this entirely speculative testimony in considering the motion for summary judgment. [A]n expert's opinion should be excluded when it is based on assumptions which are speculative and are not supported by the record." (citations omitted)).** As a result, it is impossible to ascertain whether her opinion is based on "sufficient facts or data" or whether "the witness has applied the principles and methods reliably to the facts of the case." **Fed. R. Civ. P. 702; *Cooper v. Smith & Nephew, Inc.*, 259 F.3d 194, 199-200 (4th Cir. 2001).** In short, her opinion that it is "quite likely" that "very similar" techniques are used in the Defendants' products is an admission that she has not made a comparison of the accused products and shows that her opinion is based on mere speculation. "'A reliable expert opinion must be based on scientific, technical or other specialized knowledge and not on belief or speculation, and inferences must be derived using scientific or other valid methods.'" ***Id.* (quoting *Oglesby v. General Motor Corp.*, 190 F.3d 244,**

250 (4th Cir. 1999)); *Ashley Furniture Ind., Inc. v. Sangiacomo N.A., Ltd.*, 187 F.3d 363, 377 (4th Cir. 1999).

Moreover, Dahlberg's declaration is inconsistent. Although she acknowledges that the QPSK system modulates digital data (*see, e.g.*, Declaration, at 25), she opines that the digital data, prior to being uplinked to the satellite, is converted to an analog signal. However, she previously noted that "a QPSK modulated signal (carrying digital data) is carried by the uplink/downlink." **Dahlberg Declaration, at 21.** And, attached to her declaration is an exhibit which refutes her explanation of modulation. "[F]requency shifting is accomplished through a process called *modulation* in which a high-frequency sine wave 'carries' the signal into the specified band. This sine wave is called the *carrier*. . . . [T]he frequency of the carrier wave can be varied, or modulated, in synchrony with the information-bearing signal." **Exhibit A16, *Introduction to Telecommunication Electronics, attached to* SuperGuide's Opposition to Noninfringement of the '578 Patent, at *xv* (emphasis in original, underlining added).** Thus, modulation is the conversion of the baseband signal to a higher frequency by impressing the information in the baseband onto the radio frequency signal of a higher frequency. Contrary to Dahlberg's inconsistent opinion, the transmission of digital data *via* satellite does not require the conversion of digital data into analog data prior to the uplink; it does, however, require the modulation of digital data onto an analog carrier wave. **Exhibit 1, *Direct Broadcast Satellite Communications, contained in* EchoStar Defendants' Exhibits in Support of Motions for Summary Judgment of Noninfringement of the '578, '211 and '357 Patents, at 46-47 ("Modulation refers to the way that information is imparted to an (sic) RF [radio frequency] carrier. . . . With QPSK, the carrier [wave] can assume one of four possible phases . . . ."); Exhibit A3, *Data & Computer Communications, attached to* Dahlberg Declaration, at 130-31**

("Data may be transmitted using a carrier signal by modulation. Modulation is the process of encoding source data onto a carrier signal . . . . All modulation techniques involve operation on one or more of the three fundamental frequency-domain parameters: amplitude, frequency, and phase. . . . Some transmission media, such as . . . unguided media, will only propagate analog signals. . . . [When this occurs, whatever method is used will] involve altering one or more characteristics of a *carrier frequency to represent binary data.*"); Exhibit A4, *Satellite Television: Techniques of Analogue and Digital Television, attached to* Dahlberg Declaration, at 121 (In describing the "Composition of a digital TV Integrated Receiver/Decoder (IRD)," an expert whose publication was attached to Dahlberg's declaration noted that, "[i]n 1998, however, the cost of a digital receiver was still substantially higher than the cost of its analogue counterpart." If Dahlberg's position were correct, this distinction would not have been noted.); *Codex Corp. v. Milgo Elec. Corp.*, 717 F.2d 622, 624-25 (1st Cir. 1983) ("Modulation is the alteration of the sine wave in some manner so as to impart some information to it. . . . Phase modulation, or more specifically in this case differential phase modulation, is accomplished by sending out a signal pulse during a modulation period followed by another modulation period with a signal pulse of a different phase."); *British Telecomm. P.L.C. v. Prodigy Communications Corp.*, 189 F.Supp.2d 101, 123 (S.D.N.Y. 2002) ("A 'modulating signal' according to the technical dictionary is a 'signal which causes a variation of some characteristics of a carrier signal.' To demodulate is 'to recover the modulating wave from a modulated carrier.'"). Where an expert's testimony is inherently conflicting, it fails to establish a factual dispute. *Alpex Computer Corp. v. Nintendo Co. Ltd.*, 102 F.3d 1214, 1223 (Fed. Cir. 1996) (noting that the expert's testimony actually acknowledged that the patented device and the accused device did not

operate in the same manner); *Cybor Corp. v. FAS Tech., Inc.*, 138 F.3d 1448, 1465 (Fed. Cir. 1998) ("using Alpex's expert testimony against Alpex, there were no factual dispute[s] between the parties").

In describing the same process of "uplinking" satellite transmissions, Gemstar's expert opined that "[i]t is important to recognize that signals transmitted by satellite are modulated in a different way from those broadcast terrestrially." **Weiss Supplemental Declaration, at 20.** He further noted "there are two stages of processing; the first is source coding, which prepares the signal to fit within and to withstand the rigors of the transmission channel. The second is channel coding, which modulates the source-coded signal for actual transmission. . . . [I]t is my opinion that . . . a signal transmitted *digitally* [is] fully equivalent to a signal transmitted in analog form . . ." ***Id.*, at 17 (emphasis added).** Unlike Dahlberg, Weiss makes no mention of a digital to analog conversion of digital data prior to modulation onto a carrier wave.

Moreover, regardless of the modulation technique, the fact remains, and is agreed with by Gemstar, that the satellite television services at issue entail digital data. "[T]he packetized data streams for each of the 32 transponders are QPSK modulated, which is a digital modulation technique, onto 70 MHz carrier signals. At no time does the DBS System convert any digital data streams into analog signals." **Guzman Declaration, at 3.** This opinion is not inconsistent with the modulation techniques described by every expert except Dahlberg and the Court finds her explanation of modulation as requiring a digital to analog conversion prior to transmission from the uplink center to the satellites is merely a "smokescreen."[14] As Gemstar aptly noted, the

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[14]Indeed, significant portions of the Dahlberg Declaration are devoted to criticisms of the undersigned's claim constructions in the *Markman* decision. ***See, e.g.*, Dahlberg Declaration, at 27-31.**

manner in which the television data is broadcast is simply not at issue. Although Dahlberg's explanation was apparently an attempt to create an issue of fact, it does not create a genuine one. ***Cooper, supra; Talley, supra.***

Moreover, although the Defendants' digital data contained within the downlink signal is modulated onto an analog wave for transmission, *i.e.*, an analog carrier wave, that signal is not literally "a regularly received television signal" as construed by the undersigned. ***SuperGuide, supra.*** **("The phrase 'regularly received television signal' means *an analog signal modulated onto a carrier wave* and transmitted *via* terrestrial antennae or through a cable or satellite system. It does not include a digital television signal as understood in the state of the art in the mid-1990's.") (emphasis added).** The digital data modulated onto a carrier wave for purposes of the Defendants' IRD's is not an analog signal but a digital signal both before and after modulation onto the carrier wave.

> [T]he packetized data streams for each of the 32 transponders are QPSK modulated, which is a digital modulation technique, onto 70 MHz[15] carrier signals. *At no time does the DBS system convert any digital data streams into analog signals.* The data streams are transmitted ("uplinked") to geo-synchronous satellites using large dish transmitters located at the head-end. This uplink process provides a continuous flow of data to the satellites. Each geo-synchronous satellite includes several transponders, and each transponder receives its own designated modulated carrier signal. Each transponder consists of a receiver/transmitter combination that receives a *modulated carrier signal (transporting digital data streams)* in the 17.3-17.8 GHz[16] frequency band and shifts the carrier frequency to the 12.2-12.7 GHz frequency band (while leaving the digital data unchanged). The shifted signals are then transmitted to earth in the 12.2-12.7 GHz frequency band to a user's satellite dish, typically an 18" dish.

Guzman Declaration, at 3 (emphasis and footnotes added).

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[15]Hertz is a unit of frequency equal to one cycle per second. ***Oxford's English Dictionary, supra.*** Mega is the prefix used to denote millions. ***Id.***

[16]Giga is the prefix used to denote 1000 million. ***Oxford's English Dictionary, supra.***

"'To establish literal infringement, every limitation set forth in a claim must be found in the accused product, exactly.'" ***Nilssen v. Motorola, Inc.*, __ F.Supp.2d __, 2002 WL 206007 **2 (N.D. Ill. 2002) (quoting *Southwall Tech., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1576 (Fed. Cir. 1995)).** "As a matter of law, an accused device cannot infringe if even a single limitation is not satisfied." ***Id.* (citing *Digital Biometrics*,149 F.3d at 1349).** Here, there is no literal infringement because at no point in the DBS system is an analog signal modulated onto an analog carrier wave.[17] ***See, e.g., Digital Biometrics, Inc.*, at 1348 (Noting that literal infringement could not be established because the data generated by the defendant's product was analog whereas the plaintiff's invention generated digital data.).** Likewise, there is no literal infringement because, as discussed more fully below, the IRD's process digital data which is converted to an analog signal only at the output to the television, whereas Reiter processed analog data after conversion of digital data within the mixer. ***See, e.g., Oak Tech., Inc. v. Int'l Trade Comm'n*, 248 F.3d 1316, 1330-31 (Fed. Cir. 2001) (Noting that literal infringement could not be shown where the error detection and correction processes were reversed in the accused device.).**

Defendants' also claim summary judgment is appropriate because the IRD processing of digital data is not substantially equivalent to the Reiter '578 invention. Relying on the "function-way-result" test, (*see, Tektronix, Inc. v. United States,* 445 F.2d 323, 329 (Ct. Cl. 1971)), SuperGuide argues the Defendants' "MPEG-modulated signals perform *substantially the same*

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[17]The Court agrees with Gemstar's and the Defendants' experts that the modulation technique required for the uplink of digitalized television data is not tantamount to a digital to analog conversion of the data, as argued by Dahlberg. Indeed, SuperGuide's argument, if accepted, would mean that the DBS system in its entirety, as opposed to the IRD devices, infringes the Reiter patent.

function (conveying video and program guide information to the mixer circuitry), in *substantially the same way* (modulation of an analog signal on a carrier wave)[18], to achieve *substantially the same result* (enabling a mixing operation)." **SuperGuide's Opposition to Noninfringement of the '578 Patent, at 8 (footnote added).**

"[I]nfringement under the doctrine of equivalents requires that the accused product contain each limitation of the claim or its equivalent." ***Ecolab, Inc.*, 264 F.3d at 1370-71.**

> "[C]ourts have [] recognized that to permit imitation of a patented invention which does not copy every literal detail would be to convert the protection of the patent grant into a hollow and useless thing. Such a limitation would leave room for – indeed encourage – the unscrupulous copyist to make *unimportant and insubstantial changes* and substitutions in the patent which, though adding nothing, would be enough to take the copied matter outside the claim, and hence outside the reach of law."

***Toro Co. v. White Consol. Indus., Inc.*, 266 F.3d 1367, 1370 (Fed. Cir. 2001) (quoting *Graver Tank & Mfg. Co. v. Linde Air Products Co.*, 399 U.S. 605, 607 (1950) (emphasis added)).**

SuperGuide argues that the use of an analog carrier wave to transmit digitalized data is substantially the same as "modulation of an analog signal on a carrier wave." However, as noted above, only digital signals are modulated onto carrier waves in the DBS system and the signals received by the IRD's, although modulated onto carrier waves, contain digital, not analog, data. Indeed, Gemstar agrees that the method of broadcast is not at issue. "The touchstone for determining whether an element in an accused device is equivalent to a claimed limitation is the substantiality of their differences. In order to infringe under the doctrine of equivalents, the element must differ only insubstantially from the asserted claim limitation." ***Digital Biometrics*,**

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[18]The Court, once again, notes that this argument is unique to SuperGuide. Gemstar does not dispute that in the Defendants' DBS systems the signal modulated onto an analog wave for transmission is anything other than a compressed digital signal.

149 F.3d at 1349. However, "the range of equivalents cannot be divorced from the scope of the claims." ***Vehicular Tech.*, 212 F.3d at 1382.** The Defendants' products are based on digital, as opposed to analog, methodology and the fact that both systems use a carrier wave to transmit data does not constitute infringement under the doctrine of equivalents.

(ii). Analog versus digital domain.

Gemstar acknowledges that the common use of a carrier wave for transmission is not at issue. **Gemstar's Notice of Adoption, at 7 ("[T]he way in which defendants' television signals are broadcast is not at issue with respect to the '578 patent.").** "The issue is a simple comparison for equivalency of the mixing of a microprocessor signal and a baseband video signal in either the analog domain, as required by the construed claims, or in the digital domain, as practiced by defendants." ***Id.*, at 8.**

Defendants respond that there is a substantial difference between the digital and analog domains.

> [T]he MPEG decoder receives and decodes digital data packets and then combines digital video data with digital program guide data in a pixel by pixel manner.[19] No analog signals are received by the MPEG decoder . . . . Thus, the MPEG decoder . . . cannot mix any analog signals. Further, because the MPEG decoder . . . only receives and processes digital data streams, the MPEG decoder does not convert any digital data streams . . . into analog signals . . .; i.e., the MPEG decoder does not include a digital to analog converter. . . . The MPEG decoder combines two digital signals using an arithmetic logic circuit to execute a formula that can determine pixel by pixel whether digital video, digital program guide, or both will

[19]"Decod[ed] digital video data results in [a] series of 'bitmaps.' Each bitmap is a collection of digital data that represents an image. The data contained in a bitmap corresponds to the pixels that form an image to be scanned on a television screen." **Kummer Declaration, at 7.**

> be used, and if both, how much of each will be used.[20] The MPEG decoder combines two digital bitmaps, and the result of its signal processing is a combined digital bitmap, not a mixed analog signal containing television programming and video information.

Guzman Declaration, at 7-8 (footnote added). The signal sent from the MPEG decoder to the NTSC encoder is digital. ***Id.*, at 6.** The NTSC encoder converts the digital signal into a baseband analog signal which is then sent to the output drivers. ***Id.*** Thus, Defendants argue that the "complex processing required when using the digital data streams received by the . . . IRDs is substantially different from receiving and processing analog signals." ***Id.*, at 9.**

SuperGuide and Gemstar respond that the accused devices, like Reiter, "mix" signals, *albeit* digital signals, and those signals are ultimately converted into analog signals which can be processed by the television. "Implicit in the Court's construction of [Reiter's] "mixer" is the addition of a digital-to-analog converter between the microcontroller and the true mixing function to allow mixing to take place exclusively in the analog domain." **Weiss Supplemental Declaration, at 15.**

In the *Markman* decision, the undersigned found:

> Figure 2 attached to the [Reiter '578] patent shows that the microcontroller sends program data to the mixer while the RF section sends video data to the mixer. The function of the mixer is to combine the two into one signal which is then sent to the RF section which transmits the signal to the television set. . . . [T]he parties agreed the information generated by the microcontroller would be in digital format. And, it was agreed that the video data was in analog format. . . . Thus, the mixer

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[20]"The alpha blending unit of an MPEG 2 decoder performs the arithmetic operation . . . by processing each bitmap on a pixel-by-pixel basis. The processing unit of the MPEG 2 decoder performs the weighting and summing operations on the bit (*i.e.*, digital data values) that correspond to each pixel in the video and OSD bitmaps to produce a new collection of bit values for the pixels that make up the combined bitmap. The alpha blending unit can only operate on discrete (digital) data bits. It cannot operate on continuous time varying (analog) signals." **Kummer Declaration, at 8-9.**

> converts the digital signal [from the microcontroller] into analog format and then mixes it with the video data. In other words, two analog signals are mixed.

***SuperGuide, supra*, at 502, 504 (footnote omitted).**

"The purpose of claims is not to explain the technology or how it works, but to state the legal boundaries of the patent grant." ***S3, Inc. v. NVIDIA Corp.*, 259 F.3d 1364, 1369 (Fed. Cir. 2001).** In the Reiter invention, programming information is stored in RAM[21], retrieved by the microprocessor and transmitted as a digital signal to the mixer where it must be converted to analog format before "mixing" the program information with the video signal. In the Defendants' systems, both video and program information is transmitted in digital format at the uplink center to the satellite. It is untouched at the satellite and sent *via* downlink to the IRD which decompresses, de-multiplexes and decrypts that data, still in digital format. "[T]he MPEG decoder decompresses the digital data streams that were compressed at the head-end [or up-link center] and creates the pixels that comprise the picture. To the extent that an on-screen display (OSD) of program guide information is to be combined in some fashion with video data, the MPEG decoder performs a digital pixel by pixel combination of the video data from the video decoder with the OSD data from memory." **Guzman Declaration, at 6.** This combined digital signal is converted to analog only when the information is output to the television. In other words, there is no digital to analog conversion of one signal followed by analog to analog mixing of signals within the IRD. ***K-2 Corp. v. Salomon S.A.*, 191 F.3d 1356, 1367-68 (Fed. Cir. 1999) (There can be no substantial equivalence where the patent requires a function not**

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[21]Programming information is "sent" to RAM "[u]sing telephone linkage as an example, . . . [a]t a given time on a given day [when] the [central] computer [with self-dial capabilities] can sequentially dial the telephone numbers of all subscribers having the system invention" and the computer downloads the updated program information. **Reiter '578, Col. 4, ll. 40-53.**

performed by the accused device. Thus, an in-line skate with a removable screw at the heel cannot be the equivalent of an in-line skate with a permanently affixed heel.); Virden Declaration, at ¶ 9 ("The uplink signal received by a DBS Satellite transponder is a digitally modulated, time division multiplexed sequence of MPEG 2 encoded *video data packets, audio packets and program data packets.*") (emphasis added). As recently noted by the Federal Circuit:

> [T]here are substantial differences between the binary mathematics performed by the accused devices and the mathematics in the claimed [Reiter IPG]. . . . Second, . . . the relevant circuitry in the devices is substantially different. The claimed [IPG] as properly construed requires two circuits: [digital to analog conversion] circuitry, followed by [mixing of two analog signals]. Although [the] accused device[s] contain[] these two circuits, [the IRD's process solely digital signals and the combination of video and programming information] *precedes*, rather than follows, [a digital to analog conversion for output to the television]. . . . The third substantial difference . . . is that the data processed by the devices is different.

***Oak Tech.*, 248 F.3d at 1332.**

Thus, the IRD's do not, contrary to Gemstar's argument, perform substantially the same function *in substantially the same way* to obtain substantially the same result. "It is not appropriate in this case, where all of the claimed functions are performed in the accused devices by subsequently developed or improved means, to view each such change as if it were the only change from the disclosed embodiments of the invention. It is the entirety of the technology embodied in the accused devices that must be compared with the patent disclosure."[22] ***Texas Instruments, Inc. v. U.S. Int'l Trade Comm'n*, 805 F.2d 1558, 1570 (Fed. Cir. 1986).** First, the signal sent *via* downlink contains all the information necessary for the programming guide's

[22]The Court does not construe this language as eliminating the element-by-element comparison mandated by *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17 (1997), and conducted *infra*.

creation whereas Reiter relied on the supply of that information from an external source, *i.e.*, the centralized computer. ***Id.*** **("But viewing all of the modifications in the accused devices, we conclude that they reflect more than mere substitution of an embellishment made possible by [improved] technology . . . ." (internal citations omitted)).** Second, the IRD's function only in the digital realm whereas Reiter converts the digital programming data into an analog signal which is then mixed with the analog video data, *i.e.*, Reiter functioned only in the analog realm. ***Oak Tech.*****, 248 F.3d at 1332 ("the data processed by the devices is different.").** Third, the digital data sent to the IRD's must be demodulated, demultiplexed, and decoded before processing whereas Reiter required merely that the analog signal be stripped or demodulated off of the carrier wave.[23] Indeed, SuperGuide's expert noted that this process required forward error correction, something necessary only to the digital realm. **Dahlberg Declaration, at 33-34 (At page 34 of the Declaration, a comment is included which appears to have been from an earlier draft but which was not omitted from the final one. The notation is, "quote the text that says FEC needed by digital.").** Fourth, the IRD's do not contain a mixer component in which digital data is converted followed by mixing of two analog signals. While the MPEG decoder combines data, it combines digital data, not analog data. ***Oak Tech., supra.*** There is no "mixing" of signals as claimed in the Reiter invention. "Infringement may not be found under the doctrine of equivalents if a limitation is missing, that is, not replaced with an equivalent substituent." ***Zygo***

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[23]SuperGuide's expert objected to the use of the word "strip" in the undersigned's *Markman* decision. In pointing out the numerous errors in that decision, she lamented that "[o]nce again, I am compelled to make an assumption regarding the Court's construction because 'stripping' a signal does not have any generally understood meaning in this art. I therefore take this termto (sic) mean that the television data that is carried by the analog signal is to be extracted from the signal." **Dahlberg Declaration, at 33, n.6.** However, during the *Markman* hearing, demodulation of the television signal from the carrier wave was described as "stripping."

***Corp. v. Wyko Corp.*, 79 F.3d 1563, 1568 (Fed. Cir. 1996).** Nor can the doctrine of equivalents be used to "ignore the actual language of the patent." ***K-2 Corp.*, 191 F.3d at 1367.** Assuming *arguendo* that the accused devices perform the same function and achieve the same result, it is beyond doubt that they do so in a substantially different way. ***Speedplay, Inc. v. Bebop, Inc.*, 211 F.3d 1245, 1258 (Fed. Cir. 2000); *Texas Instruments*, 805 F.2d at 1571 ("Equivalence of the subsequently-developed devices is not established by showing only accomplishment of the same result. . . . [T]he total of the technological changes beyond what the inventors disclosed transcends the equitable limits illustrated, for example, in . . . *Hughes Aircraft* . . ., and propels the accused devices beyond a just scope of the [Reiter '578] claims.").**

> It [is] not disputed that there are substantial differences between [analog and digital] technologies . . . . The differences in operation, structure, and capabilities of these systems are so extensive that . . . no reasonable trier of fact could find only insubstantial differences, or substantially the same function, way, and result, between the [Reiter '578] and the accused [digital] systems.

***Wang Labs., Inc. v. American Online, Inc.*, 197 F.3d 1377, 1386 (Fed. Cir. 1999).**

(iii). The mixer component.

In addition to the argument that the digital domain is the substantial equivalent of the analog domain, SuperGuide argues the accused devices have substituents which are the substantial equivalent of Reiter's mixer component. SuperGuide claims the MPEG decoder actually functions as a mixer; and moreover, because the NTSC encoder converts the digital signal containing the program and video information into analog format, a mixing process occurs.[24] It is an accurate statement that "[i]f, in the context of the invention, the substituent

[24]In fact, SuperGuide's expert characterizes the demodulation of the digital signal from the analog carrier wave as an analog to digital conversion performed in the MPEG component.

substantially performs the same function to achieve the same result in the same way as the required limitation, that limitation is satisfied." ***Zygo Corp.*, 79 F.3d at 1568.** Thus, SuperGuide argues the accused devices have two substituents: the MPEG decoder and the NTSC encoder.

Considering first the NTSC encoder, it is SuperGuide's position that "D/A [digital to analog] conversion at the output rather than the input of the mixer circuitry is a mere reversal of parts that does not avoid infringement." **SuperGuide's Opposition to Noninfringement of the '578 Patent, at 11.** "The critical point is not whether the combined signals are digital or analog; it is that the combined signal *must* emerge from the mixer as an NTSC compliant analog signal." ***Id.***

This, however, is an oversimplification of the differences inherent in the two technologies. ***See, Oak Tech., supra* (The binary mathematics performed by the accused devices were substantially different from those used in the patented device; the circuitry of the two devices was substantially different; the accused devices actually contained additional circuitry not found in the patented device; the data processed was different; and the processing occurred in a different order; thus, there was no substantial equivalence.).** Likewise, while the declaration of Gemstar's expert "purports to be an analysis of the structure of

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Dahlberg Declaration, *supra*. None of the exhibits attached to her declaration which purport to be diagrams of the Defendants' products show an analog to digital conversion. ***See, e.g.*, Exhibit A11, Hughs C, EchoStar DBS Satellite Receiver Hardware Block Diagram; Exhibit A13, DSS receiver block diagram, Thomson Consumer Electronics, *attached to* Declaration of Michael McLane; Exhibit A17, DBS3 CR Block Diagram.** The only exhibit which arguably supports Dahlberg's characterization is not properly identified as a block diagram of one of the Defendants' products. **Exhibit A11, Block Diagram (containing a label affixed by an unknown person or entity).** The component which allegedly performed an analog to digital conversion is identified merely as "A/D." ***Id.***

the specification and the accused device, it actually provides no more than an analysis of functional equivalency." ***Alpex Computer Corp.*, 102 F.3d at 1222.** Mr. Weiss declared:

> The mixing of a video baseband signal[] and a microprocessor signal containing program schedule information can be carried out either in the analog domain (both signals are analog) or in the digital domain (both signals are digital), and the functions performed are identical. Each input is multiplied by a value derived from a control signal (often called the "alpha" signal), and the products are then summed. The result is an image that contains the two images combined in a way controlled by the shape and amplitude of the alpha signal. Alternatively, mixing may occur by "interleaving" (alternating between) the two signals. It is well recognized in the art that such functions can be performed in both the analog and digital domains with essentially identical results. Any differences between analog and digital image processing of this sort are insubstantial.

Weiss Supplemental Declaration, at 16. However, this approach has been repudiated by the Federal Circuit.

> Mr. Milner described the shift registers of the [accused device] as storing "just one little slice of an object" to be imaged; whereas he said the bit-map system "stores the whole screen." He concluded that displaying a slice of an object is equivalent to displaying the "whole screen." Specifically, Mr. Milner testified that "the reason they are equivalent is by storing one line at a time and using it over and over and over again very quickly you can do the same thing." Thus, Mr. Milner concluded that by repeating the [accused] process the entire screen will eventually be imaged as is done in the bit map system. This is a conclusion, however, of equivalency of function – both systems store data and will eventually display an image on the whole screen. Mr. Milner did not compare the structure of the [accused device] with the bit map structure disclosed in the specification. . . . Mr. Milner's testimony that the claimed and accused devices were substantially the same in terms of function/way/result was merely conclusory . . . .

Alpex Computer Corp., supra.

> The fatal flaw in plaintiff's analysis is that [SuperGuide] failed to show that the accused device *is* programmed to perform the same functions as [its] device, and that the *way* in which the accused device performs those functions is equivalent to [its] device. That is, plaintiff failed to identify the *particular* components within the accused device (including any algorithm used by its microprocessor) that allegedly perform the [conversion of digital data into analog data and the mixing of two analog signals] and [it] failed to show that those components (and/or that algorithm) perform those functions in substantially the same way as the [Reiter

> mixer] that the court has construed [is] the corresponding structure in plaintiff's invention.

***Jackson v. Casio PhoneMate, Inc.*, 166 F.Supp.2d 1237, 1249 (N.D. Ill. 2001); *accord, Zelinski v. Brunswick Corp.*, 185 F.3d 1311, 1317 (Fed. Cir. 1999) ("conclusory expert declarations devoid of facts upon which the conclusions were reached fail to raise a genuine issue of material fact which would preclude summary judgment" (citations omitted)) .**

Moreover, digital to analog conversion occurs in the IRD's after the combination of the video and programming information, as opposed to preceding the same, and only because traditional televisions, unlike digital and high definition televisions, cannot *receive* digital signals. ***Jackson, supra.*** "Equivalence of subsequently developed devices is not established by showing only accomplishment of the same result." ***Pitney Bowes, Inc. v. Sudbury Sys., Inc.*, 128 F.Supp.2d 75, 83 (D. Conn. 2000) (citing *Zygo Corp., supra*).** Indeed, in the Reiter patent, the invention is limited by the language of the specification to the receipt in the RF section of "a regularly received television signal." **See, *e.g.*, Reiter, Col. 3, ll. 45-47 ("The system . . . is self-contained in a box . . . which receives television signals at input . . . via antenna . . . and/or cable."); Col. 5, ll. 49-52 ("The message might be accompanied by digital sound information which could be converted into analog signals in the RF section . . . and which would be perceived as electronic music."); Col. 7, ll. 25-28 ("As is well known in the art, captioning information may be sent via subcarrier, as by during the blanking interval of the video signal of the television station.").** "Having disclosed without claiming the [digital captioning component], [Reiter] cannot now invoke the doctrine of equivalents to extend its . . . limitation to encompass [digital technology]." ***Johnson & Johnston Assoc., Inc. v. R.E. Serv. Co., Inc.*, 285 F.3d 1046, 1055 (Fed. Cir. 2002)**.

The issue, then, is whether the IRD provides television programming and video information "*in substantially the same way*" in order to provide interactive television programming guides. The position of SuperGuide and Gemstar overlooks the requirement of an "element by element" analysis: "because each limitation contained in a patent claim is material to defining the scope of the patented invention, a doctrine of equivalents analysis must be applied to the individual claim limitations, not to the invention as a whole." ***Ecolab, Inc.*, 264 F.3d at 1371 (citing *Warner-Jenkinson Co.*, 520 U.S. at 40).** The IRD "must be shown to include an equivalent for each literally absent claim limitation." ***Dawn Equip. Co. v. Kentucky Farms, Inc.*, 140 F.3d 1009, 1015 (Fed. Cir. 1998).** Here, the absent element is a mixer for (1) converting the digital program data into analog format and (2) mixing that signal from the microcontroller with a regularly received television signal, *i.e.*, an analog signal.

SuperGuide claims the mixing occurs in the MPEG decoder when the digital programming information retrieved from RAM is combined with the digital video data sent from the transport IC. That combined signal is then sent to the NTSC encoder where a digital to analog conversion occurs. However, the MPEG decoders combine two digital signals using an arithmetic logic circuit to execute a formula which determines pixel-by-pixel whether digital video, digital OSD or both will be used. **Kummer Declaration, at 8-9.** Defendants note that the combination of two digital signals is not the substantial equivalent of a digital to analog conversion followed by the mixing of two analog signals. And, they note the Reiter mixer does both the conversion and the mixing whereas, in the accused IRD's, the digital signals are first combined in the MPEG decoder and then converted in the NTSC encoder.[25]

[25]SuperGuide claims the "Defendants labor to convince the Court that there is a great gulf between analog and digital broadcasting technology," in order to show the two processes are so

> [T]he Hughes IRDs are not capable of processing analog television signals and do not include any electronics capable of receiving modulated or unmodulated analog signals containing television programming or video information. . . . [When the] power [is] off to the Hughes IRDs and when the Hughes IRDs are configured to pass through analog signals, the Hughes IRDs act as a wire and merely pass the received analog signal directly out to the television without any processing of the signal by the Hughes IRDs. In other words, analog television signals are never sent to any circuitry within the Hughes IRDs because they are passed directly to a television without being processed.
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> . . .
>
> The MPEG decoder combines two digital signals using an arithmetic logic circuit to execute a formula that can determine pixel by pixel whether digital video, digital program guide, or both will be used, and if both, how much of each will be used. The MPEG decoder combines two digital bitmaps, and the result of its signal processing is a combined digital bitmap, not a mixed analog signal containing television programming and video information.
>
> . . .
>
> [Hughes' IRDs have] alternate ways to display program guide data [which] make the combination of program guide data with video data much more complex than performing an analog to digital (A-D) conversion on two analog signals and then combining the two digital signals.

Guzman Declaration, at 7-8.

> Thus, the [Defendants'] system[s] do not perform in substantially the same way [as the Reiter invention] because the inherent differences between analog signals and digital signals provide an inherently different product that results not from mere improvements to the plaintiff's system[], but from inherent changes in the type of signal that generates the [IRDs]. [In the IRDs], the focus is on the type of signal that generates the [video and programming information] and the type of receiver necessary to process the signal, and both the signal and the equipment that process the signal are inherently different and perform in substantially different ways.

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different as to defy equivalence. **SuperGuide's Opposition to Noninfringement of the '578 Patent, at 16.** Gemstar's expert, however, declared that "digital results are more consistent and reliable than are the analog results. Consequently, as digital technology has advanced so as to be able to replace analog functions with increasing performance and decreasing cost, the rate of such replacement has hastened." **Weiss Supplemental Declaration, at 16.** Moreover, SuperGuide cited cases for its proposition that "analog and digital design techniques are frequently interchangeable and fully equivalent." **SuperGuide's Opposition,** ***supra.*** Later, SuperGuide chided the Defendants for citing cases dealing with digital circuitry, stating that the case law is "of little use other than to demonstrate the futility of undue reliance on another court's analysis of another electrical circuit from another patent." ***Id.*****, at 22.** The same could be said of SuperGuide's similar reliance.

***Senior Tech., Inc. v. R.F. Tech., Inc.*, 58 F.Supp.2d 1076, 1091 (D. Neb. 1999).** "To be a 'substantial equivalent,' the element substituted in the accused device for the element set forth in the claim must not be such as would substantially change the way in which the function of the claimed invention is performed." ***Perkin-Elmer Corp. v. Westinghouse Elec. Corp.*, 822 F.2d 1528, 1533 (Fed. Cir. 1987).** The claimed equivalents here are the MPEG decoder and the NTSC encoder. Their substitution would substantially change the manner in which the Reiter invention is performed.[26] "The differences in operation, structure, and capabilities of these systems are so extensive that . . . no reasonable trier of fact could find only insubstantial differences, or substantially the same function, way, and result . . . ." ***Wang Labs.*, 197 F.3d at 1386.** In other words, the IRD's are "too different from the patented invention to support a verdict of infringement under the doctrine of equivalents [and] no reasonable jury could find otherwise." ***Digital Biometrics*, 149 F.3d at 1349; *Zygo Corp.*, 79 F.3d at 1570 ("Because the [IRDs] ha[ve] no [mixer] or equivalent thereof, a limitation required by the claim is missing and there is no infringement."); *Wolverine World Wide, Inc. v. Nike, Inc.*, 38 F.3d 1192, 1199 (Fed. Cir. 1994) ("[B]ased on the significantly different way in which the claimed and accused devices operate, . . . no reasonable factfinder could find infringement under the doctrine of equivalents.").**

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[26]In fact, SuperGuide's expert claims that equivalence is shown because the accused devices have closed captioning capability, pointing to language in the Reiter specification referencing closed captioning. However, it is well established that the language of a patent's claims may not be expanded by the language of the specification. ***Johnson & Johnston Assoc.*, 285 F.3d at 1052 ("[A] patent applicant defines his invention in the claims, not in the specification. After all, the claims, not the specification, provide the measure of the patentee's right to exclude.").**

Moreover, "if a court determines that a finding of infringement under the doctrine of equivalents would entirely vitiate a particular claim element, then the court should rule that there is no infringement under the doctrine of equivalents." ***Bell Atlantic Network Serv., Inc. v. Covad Communications Group*, 262 F.3d 1258, 1279-80 (Fed. Cir. 2001) (citations omitted).** SuperGuide and Gemstar's theory would vitiate the limitation of mixing "a regularly received television signal" as construed to mean an analog television signal. It would also invalidate the function of the mixer, *i.e.*, to mix the analog signal with the converted digital signal.[27] "Infringement, either literally or under the doctrine of equivalents, does not arise by comparing the accused product with a preferred embodiment described in the specification, or with a commercialized embodiment of the patentee." ***Johnson & Johnston*, 285 F.3d at 1052 (citations omitted).** The same applies to a potential embodiment, especially when the technology for such an embodiment had not yet been developed. "When one of ordinary skill in the relevant art would foresee coverage of an invention, a patent drafter has an obligation to claim those foreseeable limits. . . . In other words, the patentee has an obligation to draft claims that capture all

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[27]Throughout this litigation, SuperGuide and Gemstar have taken inconsistent positions. On one hand, they claim that there is no substantial difference between the analog and digital domains. On the other hand, they argue that the patent may not be limited to the analog domain because digital television, which their experts acknowledge functions substantially differently, had not yet been invented. ***See, e.g.*, Weiss Supplemental Declaration, *supra*; Dahlberg Declaration, *supra*.** Thus, they argue that the doctrine of equivalents can be applied to this later developed technology. However, both explicit and implicit in their arguments are claims that digital technology was both extant and foreseeable at the time of the patent. ***Johnson & Johnston, supra*; *Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus., Inc.*, 145 F.3d 1303, 1310 (Fed. Cir. 1998) ("Due to technological advances, a variant of an invention may be developed after the patent is granted, and that variant may constitute so insubstantial a change from what is claimed in the patent that it should be held to be an infringement." Such is not the case here.).**

reasonably foreseeable ways to practice the invention. The doctrine of equivalents would not rescue a claim drafter who does not provide such notice." ***Id.*, at 1057.**

b. A "remote control system" which "perform[s] a search."[28]

Claim (1), element (d) of Reiter '578 reads as follows:

> *a remote control system*, said microcontroller being controllable by said remote control system, *for permitting a viewer of said television to direct said microcontroller to perform a search* on at least said updated television programming information contained in said RAM of said microcontroller, a subset of at least said updated television programming information being output to said mixer so as to provide on the television screen television programming information desired by the viewer *in a desired format*.

Reiter, '578, at Col. 8, ll. 27-38 (emphasis added). In the *Markman* decision, the undersigned construed the phrase "to perform a search" as meaning "a *user-directed examination* by the microcontroller *of all of the television programming information stored in the random access memory* of the system and the retrieval of a subset of that information which meets the criteria specified by the user for display on the television set." ***SuperGuide, supra*, at 511 (emphasis added).** As to the term "desired format," the undersigned concluded that

> [t]his invention was designed for viewer selection of the format in which he desired to view the television programming information. The choice of formats of necessity is included within the system by the system designer. The fact that the system designer provides certain choices does not mean that it "selects" a desired format. The term "desired format" means a user selected format for the display of the results of the search performed by the system. Although additional information may be provided to the system by the service provider, the format for viewing that information is viewer directed.

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[28]As previously noted, "[i]nfringement may not be found under the doctrine of equivalents if a limitation is missing, that is, not replaced with an equivalent substituent." ***Zygo Corp.*, 79 F.3d at 1568.** Because the Defendants' IRD's do not operate on "regularly received television signals," there can be no infringement under the doctrine of equivalents. However, for purposes of finality, the Court will address each of the parties' contentions.

***Id.*, at 512.** The Reiter invention provided three formats: entire screen, window or overlay. The viewer had to select one of the first two options or the third "overlay" was automatically provided. This language did not encompass other formats, as opposed to additional information, preselected by the service provider. Moreover, the Reiter IPG also functioned simply as a remote control device.

The Reiter specification provided:

> If the viewer wished to view a subset of the information, e.g., the television program schedule for the day, the viewer, through a different set of code signals which might include the direct keying of the date on the handheld remote control unit 32, could then direct the microcontroller *to output only a part of the information stored in the microcontroller RAM.* Likewise, if the viewer wished to see a listing of the sports events being shown on television on a particular day, the viewer *could direct the microcontroller to search through the information in the RAM and retrieve only the requested information.*
>
> . . .
>
> The next command of the viewer at 105 might indicate whether the viewer wished to see *all of the information contained in the RAM, e.g., a complete dump of the RAM*, or whether a subset of that information was desired. . . . In this manner, the microcontroller would perform the function of a microprocessor in *performing a search on the information contained in the RAM and determining, for example, a listing of all the television movies that are to start between 6 and 11 P.M.* on a particular date.

Reiter '578, Col. 5. ll. 16-27, 67-68; Col. 6 ll. 1-3, 17-21 (emphasis added). Reiter's IPG performed a search of *all* information contained in RAM in order to produce the subset of data *specified by the viewer.* In addition, the invention included the storage of information unrelated to television programming, such as local movie times, in the RAM. ***Id.*, Col. 5 ll. 37-49 ("The invention envisions that additional information other than television scheduling information may be contained within the RAM of microcontroller 60."); Col. 6 ll. 60-68.** And, because all information had to be searched, the Reiter IPG required a RAM capable of storing voluminous information which might or might not be ultimately required.

EchoStar[29] claims its IRD's cannot infringe the Reiter invention because there is no means by which the users of its devices can trigger a search for *all* programming information and also choose the format for the results thereof, as is done in the Reiter IPG. A basic understanding of the EchoStar devices is therefore necessary.

As previously noted, in the DBS systems, the satellite uplink signals contain packets of program guide data in digital format. In the EchoStar system, this data is organized into two sets: (1) present/following data which contains program guide information for the current event and the next event to be broadcast on each service, *i.e.*, HBO, ESPN, *etc.*; and (2) event information tables which contain all the program guide information for programs which will be broadcast on each service for a period of 44 to 48 hours in the future. **Declaration of Michael Cavanaugh, filed November 8, 2001, at 3.** Each event information table is limited to the data for programs broadcast on one particular service, such as HBO. ***Id.*, at 4.** Although present/following data is contained within every uplink signal and received and transmitted by every transponder on every satellite, the event information table is not included within every uplink signal and can only be broadcast by the "home transponder," *i.e.*, a special purpose transponder whose bandwidth is dedicated to carrying program guide data. ***Id.***

Each packet of program data, whether present/following or event information table data, contains a header which allows the recipient of the packet to identify and evaluate its contents.

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[29]EchoStar is the only Defendant which moved for summary judgment based on this element. Despite this, SuperGuide's expert provided a lengthy explanation of the manner in which the Thomson and Hughes products infringe as to this element although she repined that her examination had "been made unnecessarily difficult . . . by the unanticipated construction of 'perform a search' by the Court." **Dahlberg Declaration, at 49.** Because those Defendants have not moved for summary judgment, their products are not addressed. Neither SuperGuide nor Gemstar alleges that the EchoStar products literally infringe the Reiter patent.

***Id.*, at 5.** When the packets are received in the IRD, they are stored in (1) the present/following event pool which contains the program data for the event currently being broadcast on a particular service and the program which will broadcast next on that service; or (2) the grid pool which contains the program data for programs which are "on at" a time within a system defined time window.[30] **Kummer Declaration, at 7.** This window may be as large as 48 hours in depth. **Cavanaugh Declaration, at 5.** The IRD's receive and evaluate the data packets as a rolling process. ***Id.*, at 8.**

> When the "present/following" and "schedule" data are downloaded from the satellite transponders, various selection criteria may be applied during that process so as to store only the data that are required for particular applications. This is the case, for example, with program information data for local television stations in markets distant from the subscriber's location, which data are not stored in the receiver when they appear in the data transmitted on the satellite transponders. Once the data have been so selectively downloaded, they can be further processed by the microcontroller according to the requirements of the various applications running on the receiver. This processing may include formatting into specific database structures that allow for subsequent searching, and it may include preprocessing the data to create indexes or other structures that make retrieval of subsets of the data easier and faster when required later.

Weiss Supplemental Declaration, at 24. The Reiter invention had none of these capabilities, as further noted below.

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[30]Even Gemstar's expert agreed that the storage functions differed from the Reiter patent although claiming the difference was not substantial. "These [groups of television program information data] are stored in formal database structures in the [IRD] receiver systems, although such formal structure are unnecessary to meet the requirements of the patent." **Weiss Supplemental Declaration, at 23.** He also noted that two groups of data are stored in the same structure but "[t]hey are not commingled, but they are processed separately, although using some of the same software routines." ***Id.*** This also differs from the Reiter patent because all programming information was stored in RAM. Although the event pool and grid pool are within RAM in the IRD's, they are separate "formal structures."

EchoStar IRD Models 1000, 2000, 3000, 3750, 4000 and 5000 "can identify and acquire a packet of program data associated with a particular program."[31] **Cavanaugh Declaration, at 8.** This occurs if the electronic program guide is operated in "Info" mode, causing the receiver to identify the event identification of only the program for which such extended description data is requested. ***Id.*** This data is then stored in a data structure called the "extended info cache." ***Id.*** Obviously, these devices do not infringe because, unlike the Reiter IPG which must search through all stored programming data, these models identify and acquire the packet of data for one particular program.

EchoStar Models 2700, 2800, 6000, 3900, 4700, 4900, DP 301 and DP 501 cannot identify and acquire a packet of program data associated with a particular program using the process described above because they do not store program description data in an extended info cache.[32] ***Id.*, at 9.** These IRD's store program description data in a separate data structure known as the "extended info block." ***Id.*** Description data for a particular program is accessed by using an index value stored in the event pool record. ***Id.***

> The present/following event pool is an indexed data structure. As present/following data is acquired, demultiplexed and decoded, the program guide data for a particular program on a particular service is placed into a unique location within the present/following event pool. This stored program data for a particular event is referred to as an "event pool record." EchoStar receiver software . . . indexes the location of the event pool record for the present event and the following event for each service (HBO, ESPN, CNN, etc.) to which the user can

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[31]EchoStar IRD Models 2700, 3700, 3800 and 4700 were also originally capable of performing this function. **Cavanaugh Declaration, at 8.** However, in 2001, EchoStar remotely reprogrammed these models in such a manner as to make them unable to perform the function. ***Id.*** No explanation of the reason for this action has been provided.

[32]"A 'cache' is a memory. More specifically, according to its plain meaning, a cache is a portion of memory that can be accessed quickly." ***Intel Corp. v. Broadcom Corp.*, 172 F.Supp.2d 478, 508 (D. Del. 2001).**

> have access. The indexes into the present/following event pool are held in a separate data structure referred to as the "current services list." The system can retrieve the event pool record for the present event or the next event to be broadcast on a service by referencing the current services list indexes. The software retrieves data by direct access of one memory slot in a data structure. The retrieval process does not examine all the event pool records to retrieve a particular record from the present/following event pool.

Id.*, at 10-11.** The system performs the same function for data stored in the grid event pool and retrieval from that pool also does not require an examination of all the program data stored therein. ***Id.

The Court finds that the use of an "address" system such as is employed in the EchoStar IRD's is substantially different than the Reiter IPG. As the data comes into the IRD it is assigned an index or address and when the user requests that particular data, it is accessed directly without processing all of the data held in memory. ***S3, Inc.*, 259 F.3d at 1366 ("In the 'indexed' mode, the data output from the [packet] is used as an address which is input to a random access memory (RAM) array structured as a look-up table."); *British Telecomm.*, 189 F.Supp.2d at 116 (The address is the number that uniquely identifies without reference to other information a memory location where the data will be found.).**

Gemstar maintains that the *Markman* construction of "performing a search" did not specify the manner in which the microcontroller must process the programming data.

> There are a variety of ways in which the microcontroller can process stored information in order to retrieve all of the information within a subset of the stored information. Under one approach, the microcontroller processes all of the data in the subject database at the time of the user input. An alternative approach is for the microcontroller to process the data in the database prior to user input so that the microcontroller can more quickly and efficiently retrieve the information meeting the user's criteria once the user's input has been received. The Court's construction does not prescribe a specific order in which the processing by the microcontroller must be performed and appears to recognize that the microcontroller can perform a search in a variety of ways.

Gemstar's Notice of Adoption, at 9. To the contrary, the Court found that the specification language made clear that the microcontroller did not process the programming information until after the user input.

> [I]f the viewer wished to see a listing of the sports events being shown on television on a particular day, the viewer *could direct the microcontroller to search through the information in the RAM and retrieve only the requested information.*
>
> . . .
>
> The next command of the viewer at 105 might indicate whether the viewer wished to see *all of the information contained in the RAM, e.g., a complete dump of the RAM*, or whether a subset of that information was desired. . . . In this manner, the microcontroller would perform the function of a microprocessor in *performing a search on the information contained in the RAM and determining, for example, a listing of all the television movies that are to start between 6 and 11 P.M.* on a particular date.

Reiter '578, Col. 5. ll. 22-27, 67-68; Col. 6 ll. 1-3, 17-21 (emphasis added). And, the undersigned's claim construction so stated: "The phrase 'to perform a search' means a *user-directed examination* by the microcontroller of *all* the television programming information stored in the random access memory of the system *and the retrieval* of a subset of that information which meets the criteria *specified by the user* for display on the television set." ***SuperGuide, supra*, at 511 (emphasis added).**

SuperGuide and Gemstar also argue, *albeit* meekly, that the EchoStar IRD's perform a search in a substantially equivalent manner to the Reiter IPG. The undersigned construed "perform a search" as a user directed function.

EchoStar IRD's contain hardware and software which provide the user with six different methods of operation called modes: View, Browse, Guide, Favorites, Themes and Info.

Cavanaugh Declaration, at 11.

> The View [m]ode of operation causes program guide data for the program the viewer is currently watching to be displayed in the top portion of the viewer's television screen . . . . The retrieved data is composed in an OSD bitmap and is

> combined with a bitmapped video image by the alpha blending unit of the MPEG 2 decoder chip. The display format of the guide data presented in View mode is fixed and is not alterable by the user.
>
> The Browse mode of operation causes program guide data for one or more programs to be displayed in the top and bottom portions of the viewer's television screen . . . . The display format of the guide data presented in Browse mode is fixed and is not alterable by the user.
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> The Guide mode of operation causes a screen filling graphic of grid formatted program guide data to be displayed on the viewer's television screen . . . . [E]ntering the Guide mode causes the demultiplexor to shut down processing of incoming video data packets. . . . The display format of the Guide Mode for all models is fixed and is not alterable by the user.
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> The Favorites mode of operation allows the user to build a list of services for which the receiver will maintain an index corresponding to the location of event pool records for programs on those services. . . . The selection of certain services for inclusion in the Favorites list in no way affects the acquisition of program guide data. The Favorites list can also be utilized within the View[, Guide] and Browse modes.
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> The Themes mode of operation causes a full screen of program data that matches a particular program content theme, such as "movies" or "sports," to be displayed on the television screen. . . . The display format of the program data displayed in Themes mode is fixed and is not alterable by the user.
>
> The Info mode of operation causes description data, also referred to as extended information, to appear in a dialog box superimposed on a background image on the television screen. The background image can thus be video in the case of View and Browse modes or the guide grid in the case of Guide mode.

***Id.*, at 11-15.** SuperGuide argues that the fact the user selects the mode of operation means that the IRD functions as a user directed remote control, *i.e.*, the user selects the format of the programming guide just as in the Reiter IPG. However, that selection does not occur at the same time as the microcontroller search of all programming data stored in the system as in the Reiter IPG because the programming information is sent to its own "address" for later retrieval. Moreover, EchoStar's IRD's have more sophisticated retrieval abilities, including the ability to directly access specific programming information. Despite the fact that Gemstar's expert noted

this distinction, he nonetheless opined that the EchoStar IRD's display a subset of programming information in a viewer directed format and are substantially equivalent to the Reiter invention.

> [The expert] acknowledged that the accused and claimed devices do not operate in the same way. For example, [he] testified that the bit map system creates an image by copying the bit map (the entire stored image) into the display RAM and then reading out the entire image onto the full screen. On the other hand, he explained that the [accused device] creates an image by taking a piece of the image, placing it in temporary storage, and then reading only that piece of the image onto the screen. According to [the expert], by repeating this process "a little bit at a time" until the entire image is placed on the screen, the [accused device] can achieve the same functional result as the bit-map system. This testimony does not support a conclusion that the claimed system and the [accused device] operate in substantially the same way.

***Alpex Computer Corp.*, 102 F.3d at 1223 (footnote omitted).** "[A]n expert's unsupported conclusion on the ultimate issue of infringement is insufficient to raise a genuine issue of material fact. A party may not avoid that rule by simply framing the expert's conclusion as an assertion that a particular critical claim limitation is found in the accused device." ***Arthur A. Collins, Inc. v. Northern Telecom Ltd.*, 216 F.3d 1042, 1046 (Fed. Cir. 2000) (citations omitted).**

> Finally, EchoStar produces Model 5000 and DVHS IRD's which
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> contain componentry that can receive and demodulate analog VHF/UHF television signals and componentry that can convert digital program data to an analog signal. Models 5000 and DVHS can combine those demodulated analog television signals with a converted analog signal that represents program guide data taken from the present/following event pool. The components that perform this analog signal combination are separate from and incompatible with digital components that combine digital bitmaps.

Kummer Declaration, at 10. SuperGuide claims these models "employ analog mixers for terrestrial and cable broadcasts and MPEG mixers for broadcasts *via* Satellite." **Superguide's Opposition to Noninfringement of the '578 Patent, at 14.** EchoStar conceded in Defendants' brief that it "does not assert the 'mixer' argument for the Model 5000 IRD." **Defendants' Memorandum in Support of Joint Motion for Summary Judgment of Noninfringement of**

the '578 Patent, at 8-9, n.7. The Court is unable to ascertain whether EchoStar claims these products do not infringe based on other distinctions of the 5000 and DVHS models. Thus, the Court is unable to grant summary judgment as to those two models. However, as to the remainder of the Defendants' products, summary judgment is granted.

B. The Hallenbeck '211 patent.

As noted in the undersigned's *Markman* decision,

> The Reiter '578 invention had two drawbacks: the necessity for random access memory capable of storing voluminous information and the requirement of a high speed processor capable of processing that information. These aspects of the invention presented economic obstacles to its commercialization due to the high cost of microcontrollers and microprocessors capable of performing these functions. Hallenbeck '211, applied for in 1989 and issued in 1991, solved these problems by storing only those television programs meeting predetermined selection criteria thus reducing the necessity for large memory and high speed processors. The invention stores three groups of information: event data, program title and program description.

***SuperGuide, supra*, at 512.** Or, as SuperGuide's expert noted:

> The problem [that Hallenbeck '211] addresses is that memory for storing program schedule information in a set-top box is expensive, and thus one would like to minimize the amount of memory used, but maximize the amount of useful schedule information that can be stored. Furthermore, quickly searching a large database of schedule information for programs of a particular type requires a powerful processor. Therefore, reducing the amount of stored schedule information would allow such searches to be done quickly with a less powerful and hence cheaper processor. The solution described in the patent is for the user to indicate to the system the desired schedule information in terms of time of day, channels, and/or types of programs.

Declaration of Richard E. Korf, filed November 28, 2001, at 5. Defendants move for summary judgment claiming that none of their products store all four of a desired program start time, a desired program end time, a desired program service and a desired program type, as specified in Claim 1 of the patent. Gemstar has cross-moved for summary judgment against EchoStar only,

arguing that its products meet each of the criteria specified in Claim 1. Thus, the accused products must be compared to Claim 1 of Hallenbeck '211.[33]

Claim (1) of the patent is construed:

1. As to the first element of claim (1): "first means for storing at least one of a desired program start time, a desired program end time, a desired program service, and a desired program type":
   a. The function of the claim is the storage of at least one of a desired program start time, a desired program end time, a desired program service and a desired program type. The structure for that storage is the selection criteria portion of random access memory or other electronic, magnetic or optical memory and their structural equivalents in combination with a microcontroller under the control of a stored program. The structure of the stored program is a microcontroller programmed to store at least one of a desired program start time, a desired program end time, a desired program service and a desired program type in the selection criteria portion of the memory described.
   b. The phrase "at least one of" means at least one of each desired criterion; that is, at least one of a desired program start time, a desired program end time, a desired program service and a desired program type. The phrase does not mean one or more of the desired criteria but at a minimum one category thereof.
   c. The word "desired" means that selection is made by the television user or the system. "Desired" includes a system configuration which automatically selects only those service providers received by the television user. It does not include selection by service providers.
   d. The phrases "program start time" and "program end time" are given their ordinary meanings. The phrase "program service" means a particular provider of

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[33]SuperGuide has withdrawn its allegation that the Defendants' products also infringe on Claims 2, 5 and 6. **Stipulation, filed January 14, 2002, at 6.** Gemstar claims infringement only against the EchoStar Defendants. ***See*** **Stipulation, filed January 14, 2002, at 6; Gemstar's Opposition to Defendants' Motion for Summary Judgment of Non-Infringement of the '211 Patent, filed November 28, 2001, at 1.**

> television programming, such as HBO, CNN, a local network affiliate, *etc.* The phrase "program type" means the type or classification of television programming, such as sports, movies, *etc.*

***SuperGuide, supra*, at 527.**

DirecTV and EchoStar provide direct broadcast satellite television services. In addition to its television services, DirecTV broadcasts 315 program guides. **Declaration of Robert G. Arsenault, filed November 8, 2001, at 3.** Hughes and Thomson manufacture IRD's which receive DirecTV's program guides.[34] **Declaration of Jorge Guzman in Support of Motion for Summary Judgment of Non-Infringement of the '211 Patent (As to DirecTV and Hughes), filed November 8, 2001, at 2["Guzman Declaration"]; Defendants' Brief in Support of their Joint Motion for Summary Judgment of Non-Infringement of the '211 Patent, filed November 8, 2001, at 4, n.3 ["Defendants' Brief"].** Like DirecTV, EchoStar also broadcasts program guides; however, unlike DirecTV, it manufactures the IRD's used by its system. **Supplemental Declaration of Michael Cavanaugh, filed November 29, 2001, at 2.** Thus, the DirecTV Defendants' accused products will first be considered followed by a discussion related to EchoStar's accused devices.

1. Findings of Fact as to the DirecTV Defendants.

DirecTV broadcasts Master Program Guides (MPG's) and Special Program Guides (SPG's). **Arsenault Declaration, at 3.** Depending on the subscriber's service, the MPG's may include the following: (1) all national and local programming information for the Continental

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[34]For convenience, DirecTV, Hughes and Thomson will be collectively referred to as "DirecTV Defendants."

United States (CONUS); (2) national programming for CONUS; (3) local programming for CONUS; (4) programming from multiple satellite locations; and (5) foreign programming information. ***Id.*** Each MPG contains two hours of programming schedule information beginning with the current half hour. ***Id.*** Every IRD which receives DirecTV broadcasts must be capable of storing multiple MPG's. The sole exception to this requirement are those IRD's which store only local programming, known as market MPG's, and which store only the information relevant to the subscriber's zip code. ***Id.***

DirecTV also broadcasts SPG's which contain information for programming that begins or ends within a six hour window outside the two hour window provided by the MPG's. ***Id.*, at 3-4.** The IRD's which receive SPG's also must be capable of storing multiple SPG's. ***Id.***

> The beginning and ending time of the MPGs and SPGs cannot be changed by the user, and they have no relationship to the starting and ending times of any programs. In fact each MPG and SPG will contain information for programs that begin before and after the start of that guide, and for programs that end during and after the end of that guide. Thus, the starting and ending time of an SPG or MPG is very different from the starting and ending times of programs.

***Id.*, at 4.**

The MPG's and SPG's contain channel, start time, duration, title and description information for television programs broadcast over the DirecTV system. **McLane Declaration, at 2.** No information concerning program end times is included in the MPG's or SPG's. ***Id.*** The IRD's which receive MPG's and SPG's cannot selectively store program guide information based on the actual start or end time of a television program or based on a desired program service, *i.e.*, CNN; or program type, *i.e.*, news. **Arsenault Declaration, at 4.** In other words, the IRD's store the entire set of programming information and do not have the capability of acquiring particular

types of programming information from the broadcast stream based on user selected criteria. ***Id.*, at 5.**

As previously noted, each transponder in the DirecTV satellite system transmits a digital data stream which will contain information for multiple national broadcasts as well as local broadcasts. **McLane Declaration, at 3.** Each transponder also broadcasts the MPG's and one or more SPG's. ***Id.***

> [T]he packets corresponding to each broadcast or program guide include a special identification number, called a Service Channel ID, or SCID, in the header portion of the packet. The SCID for the Master Program Guide never changes. A copy of the Master Program Guide SCID is also "hard coded" into the operating software of the IRD. The Master Program Guide also includes a look-up table, called the Channel-To-Service Segment Map, that identifies the transponder and the SCID for every program being broadcast by the DirecTV system. [The Defendants'] IRD's rely []on this information to tune to a particular transponder and select a particular set of packets when a user chooses a particular broadcast for viewing or recording.

***Id.*, at 3-4.**

2. Conclusions of Law as to the DirecTV Defendants.

Defendants' motion for summary judgment is based on their claim that none of the accused IRD's, whether manufactured by Thomson or Hughes, provide for the storage of the selection criteria claimed in Hallenbeck '211, *i.e.*, at least one of a desired program start time, a desired program end time, a desired program service and a desired program type. GemStar does not oppose summary judgment as to DirecTV, Thomson and Hughes. **Gemstar's Opposition to Defendants' Motion for Summary Judgment of Non-Infringement of the '211 Patent, at 1 ("As to Defendants EchoStar Communications Corp., EchoStar Technologies Corp. and**

EchoStar Satellite Corp. ["EchoStar"herein], Defendants' motion for summary judgment should be denied."). However, as to the DirecTV Defendants, SuperGuide states

> [a]lthough SuperGuide acknowledges that the accused DirecTV products do not meet the "at least one of each of" language adopted by the Court, (that is, SuperGuide acknowledges that the accused DirecTV products do not store all of the selection criteria, as required by the Court's claim construction), SuperGuide refutes the DirecTV Defendants' argument that the accused DirecTV products do not store any of the required selection criteria set forth in Claim 1.

SuperGuide's Notice of Adoption of Gemstar's Opposition to Defendants' Motion for Summary Judgment of Noninfringement of the '211 Patent with Additional Comments ["SuperGuide's Notice of Adoption"], filed November 28, 2001, at 3. Since the undersigned's claim construction requires the storage of each selection criteria, SuperGuide, like Gemstar, does not oppose summary judgment.

Despite this admission in its brief, SuperGuide has submitted an expert's declaration in which it is opined that the DirecTV products do, in fact, store each selection criteria and SuperGuide has submitted argument in support thereof. In an abundance of caution, this position will be addressed. However, the undersigned is compelled to note that counsel's litigation strategy of admission on the one hand and argument on the other is, at best, confusing and at worst, disingenuous.

> Literal infringement of a claim with a means-plus-function clause requires that the accused device perform a function identical to that identified in the means clause. If it performs the identical function, an accused device literally infringes a claim element under § 112 ¶ 6 only if it is insubstantially different from the corresponding structure in the patent specification. The "insubstantial difference" analysis requires a determination of "whether the 'way' the accused structure performs the claimed function, and the 'result' of that performance are substantially different from the 'way' the claimed function is performed by the 'corresponding structure . . . described in the specification,' or its 'result.'"

***Ishida Co., Ltd. v. Taylor*, 221 F.3d 1310, 1316-17 (Fed. Cir. 2000) (quoting *Odetics, Inc. v. Storage Tech. Corp.*, 185 F.3d 1259, 1267 (Fed. Cir. 1999)) (other citations omitted).** Here, the function of the claim is storage of at least one of a desired program start time, a desired program end time, a desired program service and a desired program type. Neither the function nor the structure for performing it is literally identical to the accused devices. Nonetheless,

> when a finding of noninfringement under 35 U.S.C. § 112, paragraph 6, is premised on an absence of identical *function*, then infringement under the doctrine of equivalents is not thereby automatically precluded. That is because infringement under the doctrine of equivalents may be premised on the accused and the patented component having *substantially* the same function, whereas structure corresponding to the disclosed limitation in a means-plus-function clause must perform the *identical* function.

***Interactive Pictures Corp. v. Infinite Pictures, Inc.*, 274 F.3d 1371, 1381-82 (Fed. Cir. 2001) (citations omitted).** The issue, then, is whether the function is substantially the same, a comparison which invokes the function-way-result test.

> The specification of Hallenbeck '211 provides in pertinent part:
>
> Also associated in system 10 is a random access memory 14, for storing TV program information according to the present invention. In particular, random access memory 14 may include a packet buffer 16 in which a packet of broadcast program information may be stored pending a determination whether to permanently store the information in TV program information memory 18 or [w]hether to discard this information. *Also included in memory 14 is a selection criteria list 17 which includes predetermined selection criteria* for determining whether the broadcast information in packet buffer 16 should be stored in TV program information memory 18 or discarded. In one embodiment, the selection criteria 17 may include *a desired service list 17a, a desired types of programming list 17b, desired times of listings 17c and other criteria 17d.*

Hallenbeck '211, at Col. 4, ll. 11-26 (emphasis added).

> Referring now to FIGS. 3 and 4, the selective storage of TV program information according to the present invention will now be described. In this regard, FIGS. 4a, 4b and 4c describe the operations for processing each packet in Groups I, II and III respectively. FIGS. 3a-3e illustrate a memory map for TV program information memory area 18 within random access memory 14 at various steps in FIG. 4. . . .

> A Group I packet is received in packet buffer 16 . . . . The *day and time field is scanned* to determine whether the time is in the desired time range stored in portion 17c of memory 14 . . . . If not, processing returns to get the next Group I packet . . . and the present Group I packet is not stored. *If time is in the desire range, then a test is made . . . of the service number field, to determine whether the service number is a desired service* as stored in portion 17a of memory 14. *If yes, a test is made as to the type and subtype of programming* desired . . . . *If all the tests . . . pass*, then at block 25 the size of the event (*i.e.* the title length and description length) is added to the total memory used and the *time, service and show number is stored in the event list of memory 18.*

Hallenbeck '211, at Col. 6, ll. 13-20, 22-37 (emphasis added). In contrast to the storing of selective portions of data contained with the packets, the DirecTV Defendants' products store the entire MPG and SPG. Moreover, in Hallenbeck '211, if the packet does not contain information with the required start time, it is not stored. The accused devices are stored based on the current time, a function which may not be changed by the user. And, unlike Hallenbeck '211, "[t]he IRDs do not store selected portions of any single program guide." **Arsenault Declaration, at 3.** "Depending []on the age of the IRD in terms of its manufactured design, its location in a particular market area and whether it has the capability to receive broadcasts from multiple satellite locations, the IRD will store *one or more* of these MPGs *in their entirety*." ***Id.*** **(emphasis added).** However, at least one MPG is always stored automatically.

> Each time a[n] . . . IRD is powered on, the device automatically acquires the Master Program Guide, in its entirety, into its system (RAM), . . . a volatile memory, using the constant Master Program Guide SCID that was hard coded into the IRD's operating software. Master Program Guides are not acquired based, in whole or in part, on any saved program start time, on any saved program end time, on any saved program service, or on any saved program type. When a user selects a program to watch, either by selecting it from the program guide displayed on his or her television, or by typing the channel number that corresponds to that program into the remote control, [the] IRDs perform a look-up in the Master Program Guide's Channel-to-Service Segment Map. Specifically, the device refers to the Channel-to-Service Map to determine which transponder is transmitting the selected program and to determine the SCID that identifies the packets containing the selected program. The IRD's tuner . . . then tunes to the frequency transmitted by the appropriate transponder, and receives the modulated carrier wave

> transmitted on that frequency. The demodulator . . . then strips away the carrier wave, leaving the digital data stream containing multiple broadcasts and program guides. . . . [T]he digital packets are then sent to an integrated circuit (IC), called the Transport IC . . ., where the SCIDs of each packet are compared to the SCID corresponding to the program requested by the user. Packets having the correct SCID are kept for further processing, and packets that do not are discarded.
>
> . . .
>
> When a user presses the guide button on the remote control, the . . . IRDs immediately access the Master Program Guide, which has already been stored in its entirety in the system memory, for display. At the same time, in versions 1.0 - 4.0, Thomson's IRDs also automatically load all of the Special Program Guides into the video RAM. In the most recent versions of Thomson's IRDs, versions 4.5 and 4.6, Special Program Guides are acquired, each in their entirety and one at a time . . . . None of Thomson's IRDs acquire Master Program Guides or Special Program Guides based, in whole or in part, on a stored program start time, a stored program end time, a stored program service, and a stored program type. None of Thomson's IRDs acquire Master Program Guides or Special Program Guides based, in whole or in part, on any *one* of these criteria. Said another way, none of these criteria are stored in Thomson's IRDs for the purpose of acquiring program guides.

McLane Declaration, at 3-4, 6-7.

SuperGuide claims that when the subscriber first requests the program guide, the guide displays programming for the current time and a period of hours in the future. However, the user can request information for a different time than that displayed. "In such a situation, the system also participates in identifying the desired time by determining a particular block of time, including a start time for said block and an end time for said block, for which schedule information is to be acquired, in response to the user's request. Thus, which programs are included in a particular block of time is a function of their start times and end times."

SuperGuide's Notice of Adoption, at 4.

It is an accurate statement that the SPG's contain "grid times" which correlate to the program guide grid that will be displayed on the subscriber's screen. Grid times "define the time interval of *program guide information* which [is] displayable to a subscriber." **Guzman**

Declaration, at 4 (emphasis added). Thus, whereas in the invention, the program selection is based on *program start time*, in the accused devices, the selection is based on *programming information* available at the time of day when the user activates the system or a window into the future. "The grid start time is not a desired program start time. The grid end time is not a desired program end time. Neither the grid start time nor the grid end time [is] used to select a group of programs that start or end at a particular time. *Instead, they are used to select a[] SPG that contains information for programs with many different start and end times.*" ***Id.*, at 6 (emphasis added).**

SuperGuide also claims the use of Market MPG's is the equivalent of a service criteria. "Market MPGs contain schedule information for programs broadcast on local channels into a particular market." ***Id.*, at 7.** SuperGuide argues this is tantamount to a service, *i.e.*, CNN, *etc.*, because local channels are involved. However,

> DirecTV sets the Market ID based on the user's zip code. Thus, the Market MPG that is acquired and stored is based []on geographic location. The SCID code corresponding to a particular Market MPG is determined from the Market ID. The Market ID is just a number and is not, in any way, a particular program service (a provider of television programming) or even a list of services. The Hughes IRDs do not store a desired program service criterion. The IRD does not acquire and store program guide information for just one programming provider. . . . Rather, the IRD must always acquire and store the entire Market MPG. Additionally, the IRD always acquires and stores an MPG for all national channels . . . along with a Market MPG. The user cannot choose to acquire and store only that program guide information contained in a Market MPG.

Id.

Finally, SuperGuide claims that the use of adult programming blocks is tantamount to a selected program type, *i.e.*, news, movies, *etc.* However, the adult programming is always stored within the system; it is the actual display of the program itself, not its storage, which is blocked.

***Id.*, at 8.** Thus, storage of the programming is not dependent on selection and this argument, as well, fails.

It is clear that the accused products do not use any structure which is identical to that used in Hallenbeck '211. It is also clear that the accused products do not function in a manner which is substantially similar. The Court, therefore, finds that the DirecTV Defendants' accused products do not infringe the Hallenbeck '211 patent either literally or by the doctrine of equivalents.

3. Findings of Fact as to the EchoStar Defendants.

The most concise description of the EchoStar system was provided in an opinion letter to EchoStar's in-house counsel by an outside attorney. Gemstar attached it as an exhibit to its motion for summary judgment and EchoStar did not object. Because Gemstar placed the letter in the record in support of its position, the undersigned will quote the description of the EchoStar system, a description identical to but more concise than that of EchoStar's experts. **See, *e.g.*, *LNP Engineering Plastics, Inc. v. Miller Waste Mills, Inc.*, 275 F.3d 1347, 1357 (Fed. Cir. 2002) (Because the owner of the patent placed in evidence an opinion letter obtained by the accused infringer, it was not error to refuse later in the litigation to exclude it.).** However, the undersigned has not considered or relied on any portion of the opinion concerning non-infringement contained in the letter in ruling on the parties' summary judgment motions.

> Each of the transponders [located within EchoStar's satellite system] also broadcasts limited EchoStar EPG [electronic programming guide] data (present/following EPG data) in multiplex fashion along with the audio and video signals for each of the program channels.
>
> One of the transponders, the Home transponder, also broadcasts EchoStar full EPG data in addition to program data and present/following EPG data. The EchoStar

full EPG data is broadcast by the Home transponder in carousel fashion.[35] The Home transponder sends time segmented, full EPG data for each channel (e.g. HBO, Showtime, etc.) and then proceeds to the next channel. . . .

The full EPG data transmitted on the Home transponder and the present/following EPG data transmitted on the Home transponder and the program transponders contain the same programming guide information except the full EPG data includes a wider time window (up to 48 hours) than the present/following EPG data. The full EchoStar EPG data from the Home transponder is used when the user accesses the EPG grid guide (guide mode).

. . .

The EchoStar full EPG data in the broadcast datastream is divided into 12 four-hour segments which cover a 48-hour time window. The EchoStar EPG data in the datastream from the transponders is organized into logical tables. The Service Description Table (SDT) holds data describing a service (e.g. HBO, Showtime, etc.). The Event Information Table (EIT) holds data which describes one or more events (television programs) for a particular service. The Network Information Table (NIT) is a list of all of the services that are available to the user and the transponder assignments for those services.

The EchoStar EPG data, both full EPG data and present/following EPG data, is retained in the EchoStar receiver in a database. The database has certain data structures which facilitate the manipulation of the EchoStar EPG data. The EchoStar database includes a "present/following data pool" and an "EIT data pool" which hold event data.

When the EchoStar Receiver is turned on by a viewer, the EchoStar Receiver acquires data for the NIT from the EchoStar EPG datastream. From the NIT, the EchoStar Receiver builds a service list which is a list of all services (channels) . . . . The service list is an index into the present/following data pool. The present/following data pool holds the present/following EPG data parsed from each EIT. . . . Events from the present/following data pool can be referenced from either the service list or the EPG grid block structure while events from the EIT data pool can only be referenced from the grid block structures.

When the EchoStar Receiver is turned on by the viewer, the EchoStar Receiver determines the current time of day and rounds the current time to the nearest previous hour. From the rounded time, the EchoStar Receiver selects those four-hour segments from the datastream that will cover a six-hour time window beginning with the rounded time. The EchoStar Receiver then buffers the EPG data for those selected four-hour segments into its buffer memory. All of the EPG data for those selected segments is buffered into buffer memory of the EchoStar

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[35]This data is called the event information table or EIT. **Cavanaugh Declaration, at 4.**

> Receiver including EPG data about events that may start before the rounded time or may end after the six-hour time window. From the buffered EPG data in those selected four-hour segments, the EchoStar Receiver examines the buffered EPG data on a section by section basis, discards certain data, including events that end earlier than the rounded time or start after the end of the six-hour time window. The undiscarded EPG data for those events is then stored.
>
> Also in connection with storing the selected sections and events in those sections, the EchoStar Receiver discards extended data, such as program descriptions, for the events within the selected sections. The discarded program descriptions may be reacquired from the datastream when the viewer activates the Info Button Function.
>
> . . .
>
> From the stored EPG data, the EchoStar Receiver constructs the six-hour time window for display. To construct the six-hour time window, the EchoStar Receiver rounds the current time to the previous half-hour and constructs a list of those events that are on during the six-hour time window range beginning with the time rounded to the previous half-hour. Subsequently, when the viewer selects the guide mode, the EchoStar Receiver determines the time, rounds the time to the previous half hour, and constructs the six-hour time window based on that rounded time thereby creating a rolling six-hour logical time window of displayed events that are on during the six-hour window.

Exhibit C, Letter from Dale Lischer to Kerry P. Miller, dated April 2, 2001, *attached to* Declaration of David A. Dillard in Support of Gemstar's Motions for Summary Judgment of Infringement of Claim 1 of U.S. Patents 5,293,357 and 5,038,211 and for Permanent Injunction, filed November 8, 2001, at 2-4 (footnote added). In order to be placed within this six hour window, the "start time of the program plus the end time of the program must be greater than the block start time value, and the program start time must be less than the block end time value." **Cavanaugh Declaration, at 7.** Unless both conditions are met, the program data will not be stored. ***Id.*** The selection process occurs by use of an algorithm which does not evaluate the start or end times of individual programs. ***Id.*** "EchoStar does not include a data value for the end time of a program in its broadcast datastream. [Their] IRDs display program end times in the

'browse banner' . . . display and elsewhere, but the . . . software calculates that value locally in the IRD based on program start time and duration." **Cavanaugh Supplemental Declaration, at 6.**

In addition, program data stored in the grid event pool "is used to enable 2 modes of EchoStar electronic program guide operation – the Grid guide mode and the Themes mode." **Cavanaugh Declaration, at 5-6.** The "Themes" mode is actually a type of program such as, movies, news, sports, *etc.* However, the IRD's cannot use a themes value to determine whether an EIT packet is to be stored in memory. **Cavanaugh Supplemental Declaration, at 2.** Themes value is used only to filter program guide data that has already been stored; and even after filtering, unlike the Hallenbeck '211 invention, the data is not overwritten. ***Id.***

As previously noted, each EIT carries programming information for one television service. **Cavanaugh Declaration, at 4-5.** The EIT is identified by the IRD according to a header which contains the table-ID and table-ID extension for that EIT. ***Id.*** The table_ID discloses which four-hour period of programming data is carried with the EIT and the table_ID extension discloses the service to which the data corresponds. ***Id.*** If the IRD receives the EIT, it is then stored in the grid event pool.

> The criteria available for use in evaluation of program data packets, whether [present/following] or EIT schedule data, is limited to table ID, service, block start time, block end time, and event ID. No other criteria may be used. EchoStar receivers cannot use the end time of a program as a selection criterion because EchoStar's program guide data packets do not include a program end time. EchoStar's program data packets do include a data value that describes the "theme" of the program (News, Sports, etc.), however the theme data value is never used [as] a criterion for evaluating acquisition or storage of program data packets.

***Id.*, at 8-9.**

4. Conclusions of Law as to the EchoStar Defendants.

The Defendants have moved for summary judgment of non-infringement of the accused EchoStar devices. Gemstar has cross-moved for summary judgment against EchoStar. The standard of review for summary judgment motions has been previously discussed.

Both motions involve the same issue: whether the block start time selection criteria used in the EchoStar IRD is the equivalent of the program start time and program end time selection criteria of Hallenbeck '211. EchoStar argues there is neither literal nor equivalent infringement; Gemstar argues there is both.

At the claim construction stage of this litigation, Gemstar did not argue that "a desired start time" and "a desired end time" constituted a block or range of time. ***See, e.g.,*** **Gemstar's *Markman* Brief, filed July 18, 2001, at 42 ("'[P]rogram start time' and 'program end time' refers to the times that programs start and end. As demonstrated by virtually all program guides, whether paper or electronic, programs generally start and end on the hour or half hour. . . . None of the above appears to be in dispute.").** Indeed, the EchoStar Defendants joined in that construction. **Defendants' Joint Claim Construction Brief Regarding the Hallenbeck '211 Patent, filed March 12, 2001, at 10 ("Because these criteria on their face refer specifically to two different aspects of a given television program (*i.e.*, its starting time and its ending time), they cannot together constitute a time range as suggested by [SuperGuide].).** Now, however, Gemstar argues that "the '211 patent specifically contemplates storage of a window or block of program schedule information based on a program start time . . . and a program end time . . . but with a five hour window instead of EchoStar's six hour window." **Gemstar's Opposition, at 7.**

Gemstar's position is precluded by the doctrine of judicial estoppel which "is designed to prevent litigants from playing fast and loose with the courts." ***Stairmaster Sports/Med. Prod., Inc. v. Groupe Procycle, Inc.*, 25 F.Supp.2d 270, 279-80 (D. Del. 1998), *aff'd*, 232 F.3d 909 (Fed. Cir. 2000) (applying the doctrine to a litigant who took one position during claim construction and an inconsistent position during infringement analysis).** "'[W]here a party assumes a certain position in a legal proceeding, and succeeds in maintaining that position, he may not thereafter, simply because his interests have changed, assume a contrary position, especially if it be to the prejudice of the party who has acquiesced in the position formerly taken by him.'" ***New Hampshire v. Maine*, 532 U.S. 742, 749 (2001) (quoting *Davis v. Wakelee*, 156 U.S. 680, 689 (1895)); *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1573 (Fed. Cir. 1997) ("Claims may not be construed one way in order to obtain their allowance and in a different way against accused infringers." (citations omitted)).** Based on this doctrine, then, Gemstar's motion must be denied. However, the Court will address *infra* its other contentions.

Considering first EchoStar's motion, there is no literal infringement because all of the limitations specified in the Hallenbeck '211 claim are not found in the accused devices exactly; *i.e.*, the parties do not dispute that the limitation of "a desired program end time" is not literally present in the EchoStar IRD's. ***Enercon GmbH v. Int'l Trade Comm'n*, 151 F.3d 1376, 1384 (Fed. Cir. 1998).** The issue is whether a time block, range or window is the equivalent of a specific start or end time. The undersigned finds that, as used in the accused device, it is not. ***Unique Coupons, Inc. v. Northfield Corp.*, 12 Fed.Appx. 928 (Fed. Cir. 2001) (Accused device which used dual start and stop signals to halt feeding not the equivalent of an output signal which was a combination of a timing signal and a sensing signal.).**

First, Hallenbeck '211 operates on a *user selected* start and end time; EchoStar's IRD's automatically turn on at the current time and provide a six hour window. ***Telemac Cellular Corp. v. Topp Telecom, Inc.*, 247 F.3d 1316, 1331-32 (Fed. Cir. 2001) (Telephone system using a host processor to selectively establish a communication link was not infringed by accused device which did not automatically establish communications but which relied on user initiated selection.).** Regardless of any user input, and indeed without any capability therefore, the system automatically turns on at the current time. ***Id.* (The manual entry of selections is not the equivalent of electronic transmission of data.).** There is no comparison, as in Hallenbeck '211, to ascertain if a particular program falls within the appropriate start and end time.

Second, EchoStar's IRD's store all of the programming data for the programs which are in the six hour window, regardless of whether they may ultimately match other criteria selected by the user. Hallenbeck performs a check for all four criteria before any data is stored. ***Altech Controls Corp. v. Eil Instrument, Inc.*, 8 Fed.Appx. 941 (Fed. Cir. 2001) (Multi-compressor supermarket refrigeration system which used a single signal to de-energize some compressors while energizing others did not infringe patent for refrigeration system which used a first-in-first-out sequence to minimize wear on each compressor.).** Moreover, if programming data for a program which does not fit into the six hour window is discarded, EchoStar's IRD's have the capability of reacquiring that data from the datastream because the EchoStar system provides a continuous stream of data.

And, assuming *arguendo* that the EchoStar system uses as preselection criteria program start time and service, there is no use of program end time or program type as preselection criteria. ***Maltezos v. AT&T Corp.*, 6 Fed.Appx. 850 (Fed. Cir. 2001) (Despite the fact that both inventions relied on manual activation of a keypad menu, the accused device did not contain**

a digital voice device and thus, did not infringe.). The program must be placed within the six hour window before other selection criteria are applied. In Hallenbeck '211, the program is not placed in storage *unless* it has already met the criteria of start time, end time, service and type.

> [T]o find infringement under the doctrine of equivalents the analysis often turns on whether the accused device performs substantially the same function, in substantially the same way, to achieve substantially the same result. . . . [T]he structure used to perform user-initiated communications in [Hallenbeck's] system is not the same as or equivalent to the structure in the [accused device].

***Telemac Cellular Corp.*, 247 F.3d at 1332; *Bell Atlantic Network*, 262 F.3d at 1279-80 ("[I]f a court determines that a finding of infringement under the doctrine of equivalents would entirely vitiate a particular claim element, then the court should rule that there is no infringement under the doctrine of equivalents." (citations omitted)).**

Finally, Gemstar maintains that EchoStar IRD's use the equivalent of program type as a selection criterion by virtue of its adult programming "supervisory features." EchoStar IRD's contain two such features, the Ratings Lock and the Adult-Guard features.

> The Ratings Lock feature allows the user of an IRD to install a password that must be entered before an event that has a particular "Rating Code" or "Expanded Rating" can be viewed. . . . For example, the user could install a password that must be entered before viewing of any program with a Rating Code of "PG-13" or higher . . . . The Ratings Lock feature does not affect the acquisition or storage of program guide data in any way. . . . Rather, the electronic program guide will still display data for these events and will require entry of the password before the program can be viewed.

Cavanaugh Supplemental Declaration, at 4. Thus, Gemstar's argument is without merit. Although the user may choose to prevent viewing of such programs, the IRD downloads and stores program guide information about them. It is the user's subsequent choice to view the program. There is no pre-selection criteria which discards the program information prior to storage in the system's memory.

> EchoStar also has the Adult-Guard feature which institutes a channel lock.
>
> Each EchoStar IRD maintains a list of service IDs known as the "current services list." Certain services within the . . . list will be marked as "hidden" if the owner of that particular IRD is not allowed access to those services. EchoStar IRDs . . . use the current services list to evaluate incoming program guide data, and will not store program guide data for "hidden" services.
>
> The current services list is normally constructed to allow program guide data for services in the 480 to 499 range to be acquired and stored.[36] However, instituting a Channel Lock on ***any*** service within the range causes the entire range to be marked as hidden within the current services list. [I]ncoming program data for all events corresponding to those service IDs will be identified and blocked from storage in IRD memory regardless of the actual programming content on those services. . . .
>
> The Channel Lock feature can not be used to selectively block the acquisition and storage of program guide data associated with events of an "adult" nature.

Id.*, at 3 (footnote added).** Thus, the Adult Guard actually blocks the receipt of services, not types of programming. Gemstar, however, maintains that the blocking of "adult" channels offering pornographic or sexually explicit programming is tantamount to selecting a program based on its "type." Assuming *arguendo* that this position is correct, the EchoStar IRD's still do not use as a selection criteria "a desired program end time." Moreover, Gemstar's argument is the reverse of Hallenbeck's requirement of "at least one of a desired program start time, at least one of a desired program end time, at least one of a desired program service and at least one of a desired program type." "Desired program type" is not equivalent to "undesired program type." Hallenbeck '211 envisions a user directed selection criteria each time the EPG is operated. EchoStar's IRD allows the blanket blocking of a series of channels, *i.e.*, the user makes no choice each time the IRD is used because the channels are hidden. ***See, e.g., Maltezos, supra. Blocking

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[36]"EchoStar has reserved this range of service IDs for use with content providers that primarily supply programming of an "adult" nature, such as the "Playboy" network . . . ." ***Id.*, at 2.**

the reception of certain channels is not the same as a pro-active choice each time the system is automated. ***Telemac Cellular Corp.*, 247 F.3d at 1331-32.**

In conclusion, the way the Defendants' accused IRD's perform the function of providing television programming information is so substantially different from the Hallenbeck '211 that no reasonable jury could find infringement.

C. The Hallenbeck '357 Patent.

Defendants have moved for summary judgment of non-infringement as to the Hallenbeck '357 invention. Gemstar opposes summary judgment only as to the EchoStar Defendants while SuperGuide opposes summary judgment as to all Defendants. **Gemstar's Opposition to Defendants' Motion for Summary Judgment of Non-Infringement of the '357 Patent as to Echostar ["Gemstar's Opposition"], at 1.** In addition, Gemstar has cross-moved for summary judgment against the EchoStar Defendants seeking a declaration of infringement.

The Hallenbeck '357 patent discloses a method of controlling a recording device for the unattended recording of a television program to air in the future. Only Claim 1 of the patent is in dispute and the Court has construed it as follows:

A. The term "recording device" contained within the preamble of [C]laim (1), "A method for setting an event timer to control a recording device for recording television programs, comprising the steps of" is construed according to its ordinary meaning[,] *i.e.*, a device for recording television programs. The term also appears in Elements (3) and (4) of Claim (1) where it is construed to have the same meaning.

B. The phrase "electronically storing television program schedule listings comprising a time, a channel and a title for a plurality of television programs" in the first element of Claim (1) means the electronic storage of television program listings including a time, a channel and a title for at least two television programs.

C. The phrase "accepting user designation of selected ones of the electronically stored television program schedule listings for recording" in

the second element of Claim (1) means that the user selects and designates for recording at least one television program schedule listing with the selection being made from the stored television program schedule listings.

D. The phrase "automatically electronically converting" in Element (3) of Claim (1) means a change in form of the selected television program listings by an electronic means without further involvement of the system's user. Conversion is not the extraction of information but an actual change in form of the information. The change or conversion results in event timer information sequences which can be processed by the configuration of the particular recording device and television involved.

E. The phrase "event timer information sequences" in Element (3) of Claim (1) means the information loaded into the event timer which controls[,] *i.e.*, turns on, the recording device, including but not limited to, the program start time, end time or duration of the program and the channel for each selection.

F. The term "event timer" means nonvolatile memory for storing the event timer information sequences used to control directly the recording of the selected television program. It does not include multiple memories.

G. The phrase "for directly controlling a recording device" used in [E]lement (3) of Claim (1) means the event timer sequences are used to turn on or control the recording device; however, only [] those sequences are so used and stored.

H. The term "event timer" used in [E]lement (4) of [C]laim (1) means nonvolatile memory for storing the event timer information sequences which directly control the recording device.

***SuperGuide, supra,* at 529-30.**

Hallenbeck '357 was designed to overcome the expense of non-volatile memory.

Notwithstanding the advantage of controlling a VCR [video-cassette recorder] from an on-line [television] schedule system, prior systems have not been commercially viable because prior systems required that the program schedule information be stored in a nonvolatile memory so that the VCR could be activated even if power was momentarily lost at the on-line television program schedule system. . . . Unfortunately, a nonvolatile memory large enough to store a useful quantity of television program scheduling information is prohibitively expensive and would preclude commercial viability.

Hallenbeck '357, at Col. 2, ll. 48-55, ll. 65-68.

The system of the present invention does not control the VCR directly from the on-line schedule information. Rather, this information is used to load an event timer with event timer information. The event timer then controls the VCR. . . . The television program schedule listings may be stored in nonvolatile memory because

> the VCR is controlled from the event timer. Accordingly, once event timer information is loaded into the event timer, the listings themselves are no longer needed for controlling the VCR. [O]nly the event timer need be made of nonvolatile memory. Since the event timer only requires time and channel information for a limited number of events, this nonvolatile memory can be very small.

***Id.*, at Col. 3, ll. 39-43, ll. 53-63.** Thus, the Hallenbeck '357 was designed to activate a recording device by event timer information instead of by information contained in the program guide. From the plethora of information in the program guide, Hallenbeck '357 used only program start time, stop time and channel information thus reducing the amount of data necessary for storage in non-volatile memory.

> The Hallenbeck '357 patent also provides for automatically converting the television program schedule listing selected by a user to event timer information sequences. Hence, with the Hallenbeck invention, one could bring up a guide on the television screen, select a listing, *i.e.*, a television program, for future recording, and the system would automatically convert the selected listing to event timer information sequences and store the event timer information sequences in a non-volatile event timer memory. The event timer information sequences would then be used to activate the recording device at the appropriate time and to tune to the appropriate channel to record the selected program and stop the recording device when the recording was complete.

Gemstar's Opposition, at 3 (citations omitted).

1. Findings of Fact as to the EchoStar Defendants.

In EchoStar's IRD's, VCR and PVR[37] event timers allow the user to select a television program for recording at a future date. **Amended Declaration of Steven P. Virden, filed November 16, 2001, ¶ 11.** If the recording device is external to the IRD, it sends an infrared

[37]A "PVR" is a personal video recorder which is featured in some EchoStar IRD's. **Gemstar's Opposition, at 4, n.3.** These recorders have features beyond those of the typical VCR, such as the capability to eliminate commercials. ***Id.***

signal which initiates a "record" or "stop" function. ***Id.*, ¶ 14.** This signal mimics the signal that would be sent from a remote control to a VCR; however, the signal does not contain any program data for the program slated for recording. ***Id.*** In those IRD's which have internal recording mechanisms, the event timer sends an activation signal which causes the IRD's hard drive or tape mechanism to record a program. ***Id.*** Again, the activation signal does not contain the program data for the program slated for recording. ***Id.***

In addition, EchoStar IRD's allow the user to manually create a VCR or PVR type event timer. ***Id.*, ¶ 15.** The user must individually enter data for the time the recording is to begin, the time it is to stop and the service number for the event to be recorded. ***Id.*** Manual creation also does not use any program data stored in memory. ***Id.***

VCR type event timers can be created by the user's designation from the electronic program guide display of a future event to be recorded. ***Id.*, ¶ 16.** In this use, the event timer software extracts the program data for the event to be recorded from IRD memory and uses that information "to populate an event timer data structure." ***Id.*** This data includes the start time, duration and service identification for the program. ***Id.*** In this process, the data which is loaded into the event timer is in the same form as when it was initially stored in IRD memory. ***Id.***

> EchoStar IRDs measure the start time of a program in the proprietary UTC [universal time constant] format. EchoStar event timer software is designed to operate using program start time values that are expressed in EchoStar's proprietary UTC format, and it is in UTC format that program start times are stored in both event pool records and event timer data structures. EchoStar event timer software does not require a change in the format of the program start time, and can not alter or translate the format of the program start time data to facilitate the use of start time data by non-EchoStar event timers.
>
> EchoStar IRDs track the service that is carrying an event by assigning each service a unique service number. . . . EchoStar event timers are designed to use the service ID number assigned by EchoStar to [a] particular service. EchoStar IRD software extracts the service ID number from the program data stored in memory and

> populates the event timer data structure with the service ID without changing its format. EchoStar IRD software cannot alter the format of the service ID data to facilitate its use by non-EchoStar event timers.
>
> . . .
>
> Because service ID numbers in an EchoStar network do not correspond to a particular broadcast frequency in the manner that VHF/UHF channel numbers do, the downlink signal from every transponder includes information that reveals the current transponder location of all services. Using this information, the IRD can locate the transponder that is carrying programming for a particular service and then process the downlink signal from that transponder to obtain the video and audio data needed to record that program.
>
> EchoStar event timer software populates the event timer data structure with program data in addition to the start time, duration and service ID of an event. All of this additional data is extracted from its original location in IRD memory and copied into the event timer data structure without alteration to the form of the data.
>
> . . .
>
> The event timer data structure that is used to operate the event timer is located in dynamic random access memory ("DRAM"), a form of volatile memory. This operational data structure will lose its contents in the instance of a complete power failure. A complete power failure does not include merely turning the IRD "off" via the remote control. . . .
>
> EchoStar IRDs maintain a back-up copy of event timer data in a non-volatile memory ("NVM"). The copy of the event timer data located in the NVM is not utilized by EchoStar event timer software to trigger the transmission of RECORD or STOP commands to external or internal recording mechanisms (i.e., an external VCR or a[n] IRD hard drive). . . . [This copy] is only used to re-populate the operational event timer data stored in DRAM in the event of a complete power failure.

***Id.*, ¶¶ 18, 20, 23-24, 26-27.**

2. Conclusions of Law as to EchoStar Defendants.

Defendants' first argument in support of summary judgment is that their accused products do not convert the programming data into event timer sequences which are used to actually control the recording function as is done in the Hallenbeck '357 invention. In EchoStar's IRD's, either an infrared signal controls the recording, as was well known in prior art, or an "activation"

signal which does not contain the programming data is used to turn on and off the recording function. As noted by Hallenbeck,

> Typically, VCRs also include an infrared remote control which may be used for remote activation of the record button, or any other button, to facilitate use of the VCR. As is also well known, many present day VCRs are "programmable" so that a user can set a future time and channel for unattended recording. . . . As is well known to those having skill in the VCR art, the data for events to be recorded is typically stored in the VCR in an "event timer." The event timer is typically a nonvolatile memory so that the contents thereof are not erased if power to the VCR is interrupted, although volatile memories may also be used. The event timer typically includes only that information necessary for controlling the VCR. . . . Attempts have also been made to provide a system for controlling a VCR based on user selected programs from an on-line scheduling system. For example, the . . . Young '121 patent describes a system in which user selection criteria are used by a data processor to select programs from the schedule information, and the schedule information is then used to control a VCR for unattended recording of the selected programs. In particular, according to this patent, the schedule information for the selected user programs is stored [in non-volatile memory].

Hallenbeck '357, Col. 1, ll. 18-23, 27-34; Col. 2, ll. 14-34. In EchoStar's IRD's, the data for events to be recorded is placed in event timer structures located in volatile memory, a process acknowledged by Hallenbeck to have been "well known to those having skill in the VCR art." And, like the prior art, EchoStar's IRD's use either an infrared or activation signal to control the recording, neither of which contains the programming data as is done in Hallenbeck '357. When an accused device reads on the prior art, as here, this "in and of itself mandates a finding of non-infringement." ***Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 234 F.3d 558, 570 (Fed. Cir. 2000), *cert. granted*, 533 U.S. 915 (2001), *vacated and rev'd on other grounds*, ____ U.S. ____, 2002 WL 1050479 (2002).**

Gemstar, however, argues that the EchoStar IRD's actually use the event timer information to control the recording function by virtue of EchoStar's proprietary UTC time.

> All EchoStar satellite IRDs, regardless of geographic location, measure the passage of time in a format that is proprietary to EchoStar. . . . This [UTC] time format is

> not standard to third party manufacturers of VCRs or other recording devices. EchoStar IRDs measure the start time of a program in the proprietary UTC format. EchoStar event timer software is designed to operate using program start time values that are expressed in EchoStar's proprietary UTC format, and it is in UTC format that program start times are stored in both event pool records and event timer data structures.

Virden Amended Declaration, ¶¶ 17-18.

> [EchoStar software performs the] function [of] extraction of program data to create displays [of] program start time data that is formatted as local time. Because EchoStar IRDs measure the start time of programs in . . . UTC, the start time data must be modified if it is to be in the same format as the local time zone where a particular user resides. The modification is achieved by adding an "offset" . . . .
>
> This offset is not needed by the event timer software and is removed before the program start time data is stored in the event timer data structure.

***Id.*, ¶¶ 28-30.** Gemstar argues that the removal of this offset is the equivalent of a conversion into event timer sequences. Assuming *arguendo* that Gemstar's argument is correct, EchoStar's IRD's turn on and off the recording function by an infrared or activation signal, not the programming data contained within the event timer data structure. ***Johnson & Johnston*, 285 F.3d at 1051, 1053 ("'[S]ubject matter disclosed but not claimed in a patent application is dedicated to the public,'" and thus, cannot "as a matter of law, infringe under the doctrine of equivalents . . . . '[W]hat is not claimed was not invented by the patentee, but was known and used before he made his invention.'" (quoting *Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 1106 (Fed. Cir. 1996) and *Mahn v. Harwood*, 112 U.S. 354, 361 (1884)).** Moreover, the service ID, and other data contained within the event timer data structure, is not reformatted. "EchoStar IRD software extracts the service ID number from the program data stored in memory and populates the event timer data structure with the service ID without changing its format." **Virden Amended Declaration, ¶ 20.** Thus, there is no infringement.

The Hallenbeck invention proclaimed its uniqueness over prior art by the use of limited programming data stored in non-volatile memory to control the recording device instead of an infrared signal. This limited the data which needed to be stored in non-volatile memory and allowed the invention to become commercially viable. EchoStar's IRD's operate based on data stored in volatile memory, DRAM. While a back-up copy of event timer data is stored in a non-volatile memory ("NVM"), that copy is not used to trigger the transmission of record or stop commands to external or internal recording mechanisms. Hallenbeck distinguished his invention by the use of less data to control recording stored in non-volatile memory. EchoStar's devices both store and operate in the volatile realm.

Gemstar argues that it "is much easier to access and use information stored in volatile memory as compared to information stored in non-volatile memory. In fact, it is almost always the case that information stored in non-volatile memory will be copied into volatile memory for use as opposed to storage." **Weiss Declaration, at 8.** EchoStar openly acknowledges that the programming data is stored "for use" in volatile memory. It is the Hallenbeck invention which is described as unique by virtue of the "use" of non-volatile memory to control the recording device. Thus, according to Gemstar's expert, Hallenbeck performed the function in the more difficult manner.

Moreover, in the EchoStar devices, the programming information is not used to actually initiate the recording process but merely identifies the program so that when the program actually airs, the IRD will use that information to obtain the transponder frequency and SCID code in order to extract the program from the downlink signal.

EchoStar's IRD's also have the capability of refreshing or updating programming data. **Cavanaugh Declaration, at 6-8.** In contrast, Hallenbeck noted,

> [i]t will also be understood that if the TV schedule listings are updated, the event timer information is not automatically updated, and as such, may not reflect the updated schedule listings. In other words, the VCR event timer information exists independent of the information in the TV schedule listings.

Hallenbeck '357, Col. 6, ll. 13-19.

In order to avoid literal infringement of a means-plus-function claim, EchoStar must show that its accused devices, *albeit* performing the identical function recited in the claim limitation, contain a structure that is not the same as or equivalent to a structure disclosed in the patent specification for performing that function. **35 U.S.C. § 112 ¶6; *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 934 (Fed. Cir. 1987).** Here, there is no literal infringement because EchoStar's IRD's do not contain an identical structure, *i.e.*, non-volatile memory or its equivalent, to store the event timer data. ***Microchip Techn., Inc. v. Scenix Semiconductor, Inc.*, 250 F.3d 759 (table), 2000 WL 945308 **3 (Fed. Cir. 2000) (Invention using non-volatile memory was not infringed literally or equivalently by device using SRAM which did not retain the data if power dropped below two volts.); *accord, Hazani v. United States Int'l Trade Comm'n*, 126 F.3d 1473 (Fed. Cir. 1997).**

Nonetheless, "[u]nder a modified version of the function-way-result methodology . . . two structures may be 'equivalent' for purposes of [Title 35, U.S.C.] section 112, paragraph 6 if they perform the identical function, in substantially the same way, with substantially the same result." ***Kemco Sales, Inc. v. Control Papers, Co.*, 208 F.3d 1352, 1364 (Fed. Cir. 2000).** Assuming the identical function is performed, EchoStar devices do not perform in substantially the same way. The recording device is activated by a signal, not by the event timer sequences. The data stored for programs is not converted prior to storage, as in Hallenbeck '357. More information is stored than in the Hallenbeck invention and the storage is in volatile memory instead of non-volatile

memory. And EchoStar's devices have the capability of updating programming data. The undersigned concludes that no reasonable jury could find that the manner in which the EchoStar IRD's perform a program recording function is substantially the same as that performed by Hallenbeck '357. ***See, e.g., General Elec. Co., v. Nintendo Co., Ltd.*, 179 F.3d 1350 (Fed. Cir. 1999) (Device for video games which did not disrupt television signal path did not infringe patent for switch which did so disrupt the signal path.).** Thus, there is no infringement pursuant to the doctrine of equivalents. ***Interactive Pictures Corp.*, 274 F.3d at 1381.**

3. Findings of Fact as to the Thomson and Hughes Defendants.

Thomson IRD's do not have internal recording capabilities and must be used in conjunction with a VCR external to the system. **McLane Declaration, at 7.** The user selects a program for recording from the on-screen program guide using the remote control. ***Id.*** The IRD enters the event type, channel number, start time and end time for the selection into volatile memory. ***Id.*** The channel number is not changed in any manner but is stored in volatile memory in the same format as it appeared in the program guide. ***Id.*, at 8.** The same information is also stored in non-volatile EEPROM. ***Id.***

> Once a minute, the IRD checks the system memory to see if the system time (from the IRD's internal clock) matches the start time of any program scheduled for recording. If the system time matches the start time of a program scheduled for recording, the IRD then performs a transponder and SCID look-up in the Channel-to-Service Segment Map portion of the Master Program Guide . . . . Once the transponder and SCID for the selected program have been identified, the IRD tunes to that transponder, selects packets having the appropriate SCID, processes them into a television signal . . ., and sends them to the user's VCR via either the video output or the RF out. The IRD also sends an infrared signal to the user's VCR commanding it to turn on and begin recording.
>
> . . .
>
> The information stored by the IRD for operating in conjunction with a VCR to record a television program is not designed to be processed by any particular

> recording device or television. Instead, it is designed to be acted upon by the IRD itself . . . to 1) look up the transponder and SCID information in the Master Program Guide, which is then used to tune to the appropriate transponder and select the appropriate SCIDs accordingly, and to 2) send infrared ON and RECORD commands to the VCR.
>
> In the event of a power outage, the information for VCR recording stored in the EEPROM is restored to the system memory when the power is returned to the IRD. At no time are any control functions associated with recording a program operated from the data contained in the non-volatile EEPROM.

***Id.*, at 8-9.**

The Hughes IRD's function in a similar but somewhat simpler manner. When a user selects a program for recording, the IRD creates an event timer data structure which contains the channel number, a start time and a duration. **Declaration of Jorge Guzman in Support of Motion for Summary Judgment of Non-Infringement of the '357 Patent (As to DirecTV and Hughes) ["Guzman Declaration"], filed November 8, 2001, at 5.** This information is extracted from the Master Program Guide and stored in an event time data structure in the same format, *i.e.*, there is no change from the format in the Master Program Guide. ***Id.*** The event timer data structure is stored in volatile RAM with a copy being stored in non-volatile RAM. ***Id.*, at 6.** If there is a power interruption, both the event timer data structure and the Master Program Guide will be erased; however, in that event the IRD will recover them from non-volatile memory. ***Id.*** This copy is never used to directly control the VCR. ***Id.*** When it is time to actually record the program, the IRD extracts from the Master Program Guide the channel tuning information necessary to receive the selected program. ***Id.*** Then, the SCID codes and transponder numbers are used to obtain the actual packets of television data for the program to be recorded. ***Id.*, at 7.**

3. Conclusions of Law as to the Remaining Defendants.

Curiously, although the devices of the remaining Defendants operate quite similarly to the EchoStar IRD's, Gemstar does not oppose granting summary judgment of non-infringement to them. Like EchoStar's IRD's, these devices do not electronically modify the programming data when it is placed in volatile memory. Like EchoStar, these manufacturers use volatile memory with a copy stored in EEPROM, *i.e.*, non-volatile memory, which is used to restore memory in the event of a power interruption. As in the EchoStar devices, the recording function is turned on and off by an infrared signal which does not contain any programming data. And, non-volatile memory is never used to control or activate the recording function. The method by which these devices obtain the digital packets of television information is similar to that used by EchoStar. For the reasons stated *infra* as to the EchoStar Defendants, the undersigned finds these distinctions warrant a finding of non-infringement.

SuperGuide, however, notes that in the Thomson IRD's,

> [o]nce the user has selected a program for recording from the displayed program guide, the IRD enters the event type . . ., channel number, start time and end time (computed from the program start time and the duration information in the program guide) into volatile system memory. *The channel number loaded into the system memory for recording a selected program is not changed in any way from the way in which it is stored in the program guide.* The device also backs-up the same information into the non-volatile EEPROM . . . .
>
> . . .
>
> If, between the time a program has been selected for recording and the time it is aired, the transponder from which it is transmitted and/or it[s] SCID number is changed, the program will still be recorded properly, because rather than storing the transponder and SCID number together with the other VCR control information at the time the program is selected for recording, it is looked-up in the Master Program Guide at the time recording is scheduled to begin.
>
> . . .
>
> The information stored in the system memory in response to a user's selection of a program for recording cannot be used to tune the IRD, and therefore cannot be used to send a selected television program to a VCR for recording, without consulting the Master Program Guide.

McLane Declaration, at 7-9 (emphasis added). Noting that the channel number is not reformatted prior to storage, SuperGuide argues that the other selection criteria are reformatted for storage. Thus, it claims these IRD's perform an electronic conversion prior to entry into memory, as is done in Hallenbeck when the event timer data is converted into sequences which turn on and off the recording functions.[38] Contrary to SuperGuide's argument, however, the undersigned's claim construction requires that all of the selected programming data be electronically modified resulting in the event timer information sequences. ***SuperGuide, supra,* at 524 ("Of necessity, therefore, the sequences must include the start time, end time or duration of the program and the channel for each selection.").** Thus, the Thomson devices do not infringe. Since the Hughes devices operate similarly, the same result is merited.

4. The Issue of Patent Validity.

Gemstar also cross-moved for a summary adjudication of patent validity as to the Hallenbeck '211 and '357 patents.[39] Unfortunately, a determination of non-infringement does not render the issue of patent validity moot. ***Intermatic, Inc. v. Lamson & Sessions Co.*, 273 F.3d 1355, 1368 (Fed. Cir. 2001).**

However, in support of its position, Gemstar states merely that

> [n]one of the prior art cited by defendants in this action discloses or suggests a method for setting an event timer to control a recording device for recording television programs as claimed in claim 1 of the '357 patent which requires the automatic, electronic conversion of user-designated television program listings to

[38]Gemstar made the same argument as to the EchoStar devices but failed to oppose summary judgment in favor of these Defendants.

[39]The Defendants and SuperGuide made no motions regarding patent validity.

> form event timer information sequences, stored in non-volatile memory and used to activate and control a VCR to record the selected television program.

Memorandum of Points and Authorities in Support of Gemstar's Motion for Summary Judgment of Infringement of Claim 1 of U. S. Patent 5,298,357 by EchoStar, and for Permanent Injunction, filed November 8, 2001, at 17-18.

> As to the '211 patent, Gemstar similarly states that
>
> [n]one of the prior art cited by defendants in this action discloses or suggests an online television program schedule system as claimed in claim 1 of the '211 patent which requires the selective downloading, storing and displaying of television program schedule information that matches at least one of each of a desired program start time, a desired program end time, a desired program service and a desired program type.

Memorandum of Points and Authorities in Support of Gemstar's Motion for Summary Judgment of Infringement of Claim 1 of U. S. Patent 5,038,211 by EchoStar, and for Permanent Injunction, filed November 8, 2001, at 16.

> "Of course, a party seeking summary judgment always bears the initial responsibility of informing the district court of the basis for its motion, and identifying those portions of 'the pleadings, depositions, answers to interrogatories, and admissions on file, together with affidavits, if any,' which it believes demonstrate the absence of a genuine issue of material fact."
>
> ...
>
> Biotec's motion contained more than a bare assertion of lack of evidence. Biotec presented deposition testimony of the defendants' primary witnesses wherein they admitted knowing no facts that implied the invalidity of the patents. In *Celotex* [], the Court explained that "the burden on the moving party may be discharged by "showing" – that is, pointing out to the district court – that there is an absence of evidence to support the nonmoving party's case."

***Biotec Biologische Naturverpackungen GmbH & Co. v. Biocorp, Inc.*, 249 F.3d 1341, 1353-54 (Fed. Cir. 2001) (quoting *Celotex Corp. v. Catrett*, 477 U.S. 317, 323, 325 (1986)) (other citations omitted); *accord, Crown Operations Int'l, Ltd. v. Solutia, Inc.*, 289 F.3d 1367, 1377 (Fed. Cir. 2002) (The party moving for summary judgment has the burden to show there is**

an absence of evidence in support of the nonmoving party's case.); *Applied Companies v. United States*, 144 F.3d 1470, 1475 (Fed. Cir. 1998) (Conclusory or speculative statements of counsel or a witness as to the ultimate issue do not create a genuine issue of material fact.). Gemstar's conclusory statements, without any supporting evidence, are insufficient to shift the burden of coming forward to the Defendants. Indeed, Gemstar's bare assertion of validity, unsupported by any reference to prior art or other evidence, leads the undersigned to conclude the motion was not seriously intended. It is, therefore, denied.

However, the denial of this motion leaves pending the Defendants' counterclaims for declarations of invalidity. In view of the Court's findings of non-infringement, the Defendants will be given an opportunity to advise if a ruling on this issue is sought. Otherwise, those counterclaims will be dismissed without prejudice.

5. Defendants' motions based on Prosecution Estoppel.

As an alternative ground for summary judgment, the Defendants claim SuperGuide and Gemstar are estopped from asserting infringement claims based on the narrowing of claims during the prosecution history of each of the patents.

Because the undersigned has concluded that none of the patents is infringed by the Defendants' products, this issue will not be reached. ***See, e.g., Ampex Corp. v. Mitsubishi Elec. Corp.*, 173 F.3d 434 (table), 1998 WL 690859 (Fed. Cir. 1998); *Graco Children's Products, Inc. v. Regalo Int'l, LLC*, 167 F.Supp.2d 763 (E.D. Pa. 2001).**

6. Thomson's Renewed Motion for Summary Judgment Based on License.

Thomson has renewed its motion for summary judgment against SuperGuide and Gemstar on the basis of a sub-licensing agreement between it and Gemstar. In that motion, Thomson claims it cannot have infringed SuperGuide's patents because it had a licensing agreement with Gemstar, the sole assignee of the patents at issue. In essence, the sub-licensing agreement is Thomson's defense to the allegations of infringement. Because the Court has found no infringement by Thomson, it is unnecessary to reach this motion and the same is denied as moot.

IV. ORDER

IT IS, THEREFORE, ORDERED as follows:

1. Plaintiff SuperGuide Corporation's motion for leave to file a motion to preclude Defendants from using and relying on untimely produced software code, filed October 10, 2001, is hereby **DENIED**;

2. The motion by Defendant Thomson Consumer Electronics, Inc., to amend the Memorandum of Decision filed October 25, 2001, is **GRANTED,** and Footnote 3 at Page 3 thereof is hereby **DELETED**;

3. The Defendants' joint request for permission to file the amended declaration of Stephen P. Virden, filed November 16, 2001, is hereby **GRANTED**;

4. The letter from Charles A. Burke, dated November 15, 2001, is construed by the Court as a motion to include Exhibit A inadvertently omitted from the Defendants' brief; the Clerk of Court is directed to file such document, and the same is hereby **GRANTED**;

5. The motions by Defendant EchoStar Communications for leave to file pleadings under seal, filed November 8, 2001, and for leave to file a sealed Memorandum, filed November

28, 2001, and a motion for leave to file Exhibits 9-20 under seal, filed November 29, 2001, are hereby **GRANTED**;

6. The motion by Defendant Thomson Consumer Electronics, Inc., for leave to file documents under seal, filed November 8, 2001, is hereby **GRANTED**;

7. The motion by Third-Party Defendant Gemstar Development Corporation for leave to file materials under seal, filed November 28, 2001, is hereby **GRANTED**;

8. Plaintiff SuperGuide Corporation's motion for leave to file memorandum and supporting materials under seal, filed November 28, 2001, is hereby **GRANTED**;

9. Plaintiff SuperGuide's motion to amend the declaration of Teresa Dahlberg, filed February 6, 2002, is hereby **GRANTED**;

10. The Defendants' joint motions for summary judgment of non-infringement of the Reiter '578 patent, filed November 8, 2001, are hereby **GRANTED** with the exception of EchoStar's IRDs Models 5000 and DVHS. As to those models, EchoStar may submit additional evidence in support of summary judgment in the form of a pleading not to exceed six double-spaced pages in size 12 font with no footnotes on or before 15 days from entry of this Order. SuperGuide and Gemstar may respond in the form of a combined pleading not to exceed six double-spaced pages in size 12 font with no footnotes on or before 15 days from the date of EchoStar's filing;[40]

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[40]"Counsel should remember that '[j]udges are not like pigs, hunting for truffles buried in briefs.'" ***Teague v. Bakker*, 35 F.3d 978, 985 n.5 (4th Cir. 1994) (quoting *United States v. Dunkel*, 927 F.2d 955, 956 (7th Cir. 1991)) (An observation made in response to counsel's "improperly spacing words and citations, using footnotes for case cites rather than citing cases in the body of the brief, expending pages, and reducing margins," all of which have occurred in this action at one time or another.).**

11. The Defendants' joint motions for summary judgment of non-infringement of the Hallenbeck '211 and Hallenbeck '357 patents, filed November 8, 2001, are hereby **GRANTED**;

12. Third-Party Defendant Gemstar Development Corporation's motion for summary judgment of infringement of the Hallenbeck '211 patent, for a declaration of validity, and for a permanent injunction as to the EchoStar Defendants, filed November 8, 2001, is hereby **DENIED**;

13. Third-Party Defendant Gemstar Development Corporation's motion for summary judgment of infringement of the Hallenbeck '357 patent, for a declaration of validity, and for a permanent injunction as to the EchoStar Defendants, filed November 8, 2001, is hereby **DENIED**;

14. The motion of Defendant Thomson Consumer Electronics, Inc., for summary judgment of non-infringement based on its sub-licensing agreement, filed November 8, 2001, is hereby **DENIED** as moot; and

15. The Defendants' motions for summary judgment based on prosecution history estoppel are hereby **DENIED** as moot;

16. The third-party complaint of DirecTV and Hughes against Gemstar in which a declaration of ownership of the patents and of non-infringement was sought is hereby rendered moot;

17. There remains pending Gemstar's cross-claim against SuperGuide for breach of contract and SuperGuide's cross-claim against Gemstar for a declaration of the field of use of the licensing agreement between the parties. Absent notification from the parties, it is the Court's intention to dismiss these claims without prejudice.

IT IS FURTHER ORDERED that the parties respond, on or before 15 days from service of this Memorandum of Opinion through pleadings not to exceed six double-spaced pages in 12-size font with no footnotes, to the following issues:

1. whether there remain pending any claims which the parties intend to litigate in this action and if, so, what such claims encompass; and

2. whether any portion of the Memorandum of Opinion reveals proprietary information such that it should be redacted from the public record.

The Clerk of Court is instructed to maintain this opinion under seal pending further order of this Court.

THIS the 2nd day of July, 2002.

LACY H. THORNBURG
UNITED STATES DISTRICT COURT JUDGE

ejb

United States District Court
for the
Western District of North Carolina
July 3, 2002

* * MAILING CERTIFICATE OF CLERK * *

Re: 1:00-cv-00144

True and correct copies of the attached were mailed by the clerk to the following:

A. Ward McKeithen, Esq.
Robinson, Bradshaw & Hinson, P. A.
101 No. Tryon St.
Suite 1900
Charlotte, NC 28246

Everett J. Bowman, Esq.
Robinson, Bradshaw & Hinson, P. A.
101 No. Tryon St.
Suite 1900
Charlotte, NC 28246

John J. Barnhardt III, Esq.
Alston & Bird, LLP
Bank of America Plaza
101 S. Tryon St., Suite 4000
Charlotte, NC 28280-4000

Richard M. McDermott, Esq.
Alston & Bird, LLP
Bank of America Plaza
101 S. Tryon St., Suite 4000
Charlotte, NC 28280-4000

Charles A Burke, Esq.
Womble, Carlyle, Sandridge & Rice
P. O. Drawer 84
Winston-Salem, NC 27102

Michael E. Ray, Esq.
Womble, Carlyle, Sandridge & Rice
P. O. Drawer 84
Winston-Salem, NC 27102

Darryl E. Towell, Esq.
Jones Day Reavis & Pogue
5 Park Plaza, Suite 1100
Irvine, CA 92614

Michael J. Newton, Esq.
Jone Day Reavis & Pogue

2727 N. Harwood St.
Dallas, TX 75201 .515

Victor G. Savikas, Esq.
Jones Day Reavis & Pogue
555 W. Fifth St., Suite 4600
Los Angeles, CA 90013-1025

Kevin G. McBride, Esq.
Jones, Day, Reavis & Pogue
555 West 5th St.
Suite 4600
Los Angeles, CA 90013

Michael J. Newton, Esq.
Jones, Day, Reavis & Pogue
555 West 5th St.
Suite 4600
Los Angeles, CA 90013

Wyatt S. Stevens, Esq.
Roberts & Stevens, P.A.
P.O. Box 7647
Asheville, NC 28802

Harold J. McElhinny, Esq.
Morrison & Foerster LLP
425 Market St.
San Francisco, CA 94105

Paul J. Riley, Esq.
Morrison & Foerster LLP
425 Market St.
San Francisco, CA 94105

John P. Corrado, Esq.
Morrison & Foerster LLP
1750 Tysons Blvd., Suite 1550
McLean, VA 22102

Charles C. Carson, Esq.
Morrison & Foerster LLP
1750 Tysons Blvd., Suite 1550
McLean, VA 22102

Mark Danis, Esq.
Morrison & Foerster, LLP
3811 Valley Centre Dr.
Suite 500
San Diego, CA 92130-2332

Anders T. Aannestad, Esq.
Morrison & Foerster, LLP
3811 Valley Centre Dr.
Suite 500
San Diego, CA 92130-2332

Larry McDevitt, Esq.
Van Winkle, Buck, Wall, Starnes & Davis, P. A.
P. O. Box 7376

Asheville, NC 28802

Lawrence K. Nodine, Esq.
Needle & Rosenberg, P.C.
127 Peachtree St., N.E.
Atlanta, GA 30303-1811

Nagendra Setty, Esq.
Needle & Rosenberg, P.C.
127 Peachtree St., N.E.
Atlanta, GA 30303-1811

Mitchell G. Weatherly, Esq.
Needle & Rosenberg, P.C.
127 Peachtree St., N.E.
Atlanta, GA 30303-1811

William F. Long, Esq.
Needle & Rosenberg, P.C.
127 Peachtree St., N.E.
Atlanta, GA 30303-1811

J. Donald Cowan Jr., Esq.
Smith Moore LLP
P. O. Box 27525
Raleigh, NC 27611

Dixie T. Wells, Esq.
Smith Moore LLP
P. O. Box 27525
Raleigh, NC 27611

David M. Carter, Esq.
Carter & Schnedler
P. O. Box 2985
Asheville, NC 28802

J. Derel Monteith Jr., Esq.
Carter & Schnedler
P. O. Box 2985
Asheville, NC 28802

James E. Doroshow, Esq.
Stroock & Stroock & Lavan LLP
2029 Century Park East, #1800
Los Angeles, CA 90067

Allan S. Cohen, Esq.
Stroock & Stroock & Lavan LLP
2029 Century Park East, #1800
Los Angeles, CA 90067

Brian K. Brookey, Esq.
Christie, Parker, & Hale
350 W. Colorado Blvd.
Suite 500
Pasadena, CA 91105

Richard A. Clegg, Esq.
Christie, Parker, & Hale

350 W. Colorado Blvd.
Suite 500
Pasadena, CA 91105

James E. Doroshow, Esq.
Christie, Parker, & Hale
350 W. Colorado Blvd.
Suite 500
Pasadena, CA 91105

David A. Dillard, Esq.
Christie Parker & Hale LLP
350 W. Colorado Boulevard, Suite 500
P.O. Box 7068
Pasadena, CA 91109-7068

George G. Matava, Esq.
LeBoeuf, Lamb, Greene & MacRae, L.L.P.
633 Seventeenth St., Suite 2000
Denver, CO 80202

John R. Posthumus, Esq.
LeBoeuf, Lamb, Greene & MacRae, L.L.P.
633 Seventeenth St., Suite 2000
Denver, CO 80202

Brian Andrew Carpenter, Esq.
LeBoeuf, Lamb, Greene & MacRae, L.L.P.
633 Seventeenth St., Suite 2000
Denver, CO 80202

Richard G. Parker, Esq.
O'Melveny & Myers
555 13th Street, N.W.
Suite 500 West
Washington, DC 20004-1109

Ian Simmons, Esq.
O'Melveny & Myers
555 13th Street, N.W.
Suite 500 West
Washington, DC 20004-1109

Steven B. Pokotilow, Esq.
Stroock & Stroock & Lavan LLP
180 Maiden Lane
New York, NY 10038

Ian DiBernardo, Esq.
Stroock, Stroock & Lavan, LLP
180 Maiden Lane
New York, NY 10038-4982

James DeCarlo, Esq.
Stroock, Stroock & Lavan, LLP
180 Maiden Lane
New York, NY 10038-4982

Roderick G. Dorman, Esq.
Hennigan, Bennett & Dorman

601 South Figueroa St.
Suite 3300
Los Angeles, CA 90017

cc:

Judge	(X)
Magistrate Judge	( )
U.S. Marshal	( )
Probation	( )
U.S. Attorney	( )
Atty. for Deft.	( )
Defendant	( )
Warden	( )
Bureau of Prisons	( )
Court Reporter	( )
Courtroom Deputy	( )
Orig-Security	( )
Bankruptcy Clerk's Ofc.	( )
Other_____	( )

Frank G. Johns, Clerk

Date July 3 2002

By: _____
Deputy Clerk